FILE NO.

SANYO

SERVICE MANUAL

Video Cassette Recorder

VHR-778E

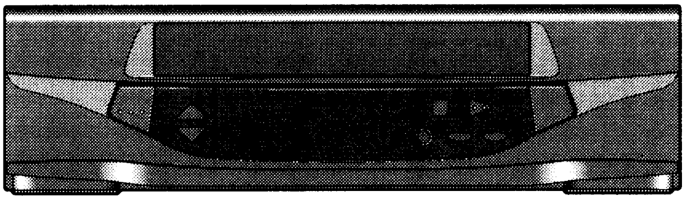
(Product Code : 143 173 04)
(U.K.)

VHR-778G

(Product Code : 143 173 11)
(Germany)

VHR-788G

(Product Code : 143 173 10)
(Germany)



(VHR-778G)

VHS
PAL

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CIRCUIT DIAGRAMS (Refer to the separate volume)

Please see other materials with Reference number given in table below.

Materials	Model No.	Reference No.
Mechanism Manual	V95 I Mechanism	MM531433
	V95 II Mechanism	MS531500

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the parts List. Do not deviate from the resistance, wattage, and voltage ratings shown.

NOTE: 1. Parts order must contain model number, part number, and description.
2. Substitute parts may be supplied as the service parts.
3. N.S.P. : Not available as service parts.

Design and specifications are subject to change without notice.

REFERENCE No.SM531632

SANYO

Notice

FILE No.

☒ CORRECTION ☐ PRODUCTION CHANGE
☐ SERVICE FLASH ☐ ADD INFORMATION

Please add this notice to the Service manual listed below.

Date :Jun.19.1998

Category : Video Cassette Recorder

Model Name	Reference No.	Destination
VHR-778E	SM531632	U.K.
VHR-778G	SM531632	Germany
VHR-788G	SM531632	Germany

The reason of change.

A : Misprint B : Quality Reliability C : Standardization D : Design
E : Delection F : Addition G : Multiple Use

Section	Loc.No.		Part No.	Description	Interchange-ability	Reason
COMPL PWB,CP-1-A(Page 17)	CN301	New	645 012 5645	SOCKET,FPC 31P(N.S.P.)	Yes with Old	G
(Page 18)	IC301	New	410 321 0908	IC LC866852A-5J13, VHR-778E ONLY	Yes with Old	G
(Page 20)	C3581	Old	403 184 9300	MT-POLYEST 0.047U J 50V	No	D
		New	403 184 9805	MT-POLYEST 0.22U J 50V	No	
(Page 22)	R3581	Old	401 013 7206	CARBON 120K JA 1/4W	No	D
		New	401 021 4006	CARBON 56K JA 1/4W	No	
	R5120	Old	⚠ 402 004 2705	FUSIBLE RES 8.2 JA 1/4W, VHR-778E ONLY	No	D
		New	⚠ 402 080 0008	FUSIBLE RES 8.2 JA 1/4W, VHR-778E ONLY	No	
	PR512	Old	⚠ 645 014 2529	PROTECTOR,1.25A 125V	No not use	D
		New	⚠ 645 014 2536	PROTECTOR,1.5A 125V		
COMPL PWB,TM-1 (Page 23)	CN711	New	645 012 5645	SOCKET,FPC 31P(N.S.P.), VHR-778G ONLY	Yes with Old	G
	CN714	New	645 012 5645	SOCKET,FPC 31P(N.S.P.), EXCEPT VHR-778G	Yes with Old	G

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special *significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated* in the parts List. Do not deviate from the resistance, wattage, and voltage ratings shown.

AP4HN/E3,G3,G2
143 173 04,11,10 Printed in Japan

SANYO Electric Co., Ltd.
Osaka,Japan

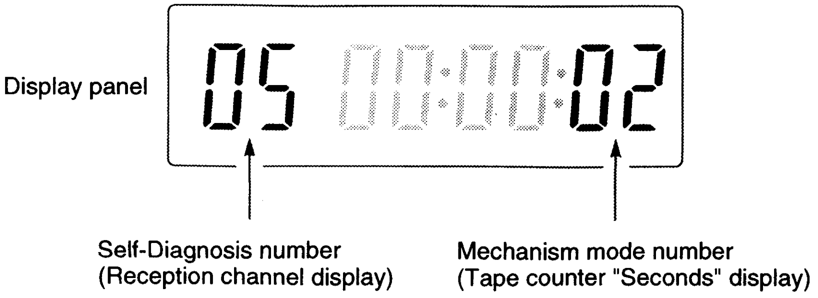
SELF-DIAGNOSIS DISPLAY

Mechanism Mode Display / Head Output Drop Warning Display / Cylinder Rotation Accumulated Time Display

This unit displays the diagnosis contents of abnormalities and the mechanism, mode on its display panel in 2-digit numbers. When the head playback output has dropped, the "L" sign will be blinked. Some models (listed later) will also display the cylinder rotation accumulated time.
These display shows the outline of the problems. Use it as a reference when servicing the unit.

1. Self-Diagnosis Contentes and Mechanism Mode Display

- When the STOP button on the remote control is pressed for about 10 seconds continuously, the self-diagnosis number will be displayed on the reception channel display of the display panel and number indicating the failed mechanism mode (changed mode when being shifted) on the tape counter "seconds" display for 10 seconds each.
- During self-diagnosis display, displays other than the diagnosis number/mechanism mode number and the cylinder accumulated rotation time display described later (some models only) will be turned off and when displays end, the normal display will be returned automatically.
- Refer to "Self-Diagnosis Contents" for the self-diagnosis numbers and the "Mechanism Mode Display Contents" for the mechanism mode numbers.
- When the "0" button on the remote control unit is pressed during display, and clearing the self-diagnosis display and mechanism mode display.



Self-Diagnosis Contents

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
00	There is no abnormality in the mechanism.		
01	The cylinder motor does not rotate.	• The cylinder motor is faulty. • The control of the cylinder motor is faulty. • The tape winds around the cylinder.	Shifts to the STOP mode.
02	The take-up reel does not rotate.	• The take-up reel is caught. • The reel belt is faulty. • The take-up torque has decreased.	Shifts to the STOP mode.
03	The capstan motor does not rotate.	• The capstan motor is faulty. • The control of the capstan motor is faulty.	Shifts to the STOP mode.
04	The tape cannot be loaded with the cassette inserted. (But unloading can be performed.)	• Error in the operations of the tape loading mechanism. • Foreign particles in the tape loading mechanism. • The tape end sensor is faulty. • The reel brake of the tape cassette has not been released.	Unloads, shifts to the INITIAL mode, and the power goes off.
05	Tape loading and unloading cannot be performed with the cassette inserted.	• The tape guide is caught. • The loading motor is faulty. • The control of the loading motor is faulty.	The power is forcibly turned off with the mechanism at its current position.

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
06	Front unloading cannot be performed when ejecting the cassette. (Front loading can be performed.)	• The cassette drive mechanism is faulty. • The front door is caught.	Front loads and shifts to the STOP or INITIAL mode. • When the power switch is turned on before eject operations: Shifts to the STOP mode. • When the power switch is turned off before eject operations: Shifts to the INITIAL mode and the power goes off.
07	Front loading and front unloading cannot be performed when ejecting the cassette.	• The tape cassette is caught in the cassette drive mechanism. • The main cam and front rack gear of the front loading mechanism have not engaged properly. • The gears of the front loading drive mechanism have not engaged properly.	The power is forcibly turned off with the mechanism at its current position.
08	The mechanism becomes 1 (REVIEW) while moving from 2 (IDLER), 3 (STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	The power is forcibly turned off with the mechanism at its current position.
09	The mechanism becomes 7 (INITIAL) while moving from 1 (REVIEW), 2 (IDLER), 3 (STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	Carries out tape take-up operations, shifts to the INITIAL mode, and the power goes off.
10	The capstan motor does not rotate and cassette tape eject when cassette tape insert.	• The capstan motor is faulty. • The control of the capstan motor is faulty.	Shifts to the STANDBY mode. Protect cassette tape.
11	The cylinder motor does not rotate and cassette tape eject when cassette tape insert.	• The cylinder motor is faulty. • The control of the cylinder motor is faulty.	Shifts to the STANDBY mode. Protect cassette tape.

Note: For details of mechanism operations corresponding to the mechanism positions of the self-diagnosis numbers 08 and 09 above, refer to the separate volume on the V95 I mechanism manual. These manual reference numbers are shown in the cover.

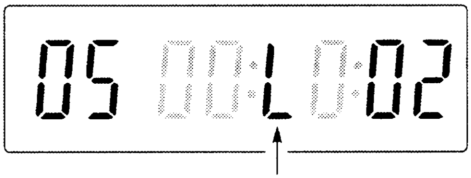
Mechanism Mode Display Contents

Mode No.	Mechanism Mode	Mode No.	Mechanism Mode	Mode No.	Mechanism Mode
00	CASSETTE OUT	07	SLOW	14	FAST FORWARD
01	STANDBY	08	PLAY	15	REWIND
02	STOP	09	REC	16	VIDEO INSERT
03	STILL	10	AUDIO DUBBING	17	VIDEO INSERT-PAUSE
04	REC-PAUSE	11	X2 SPEED PLAY	18	AUDIO/VIDEO INSERT
05	AUDIO DUBBING-PAUSE	12	CUE	19	REVERSE X2 SPEED PLAY
06	FRAME ADVANCE	13	REVIEW	99	OTHERS

2. Head Output Drop Warning Display

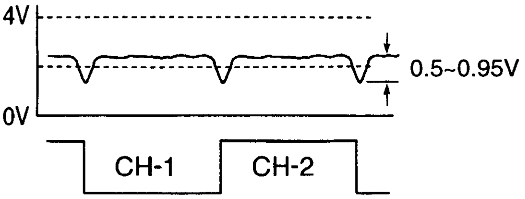
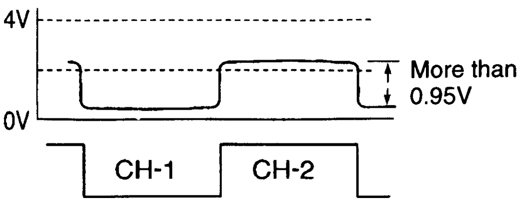
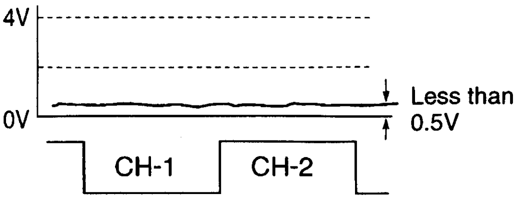
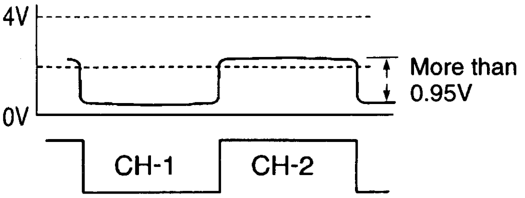
- When the STOP button on the remote control is pressed for 10 seconds continuously 10 seconds after play starts, "L" will be displayed blinking at the first digit of the minutes position on the tape counter when the head output is lower than the specified value to indicate an abnormality.
- The cause of the abnormality may be due to drop in the playback output caused by drop in the efficiency of the cassette used or head clogging. Refer to "Head Playback Output Voltage Check" as a means to judge the abnormality.

Display panel



Head output drop warning display (Tape counter "1st digit of Minutes." position)

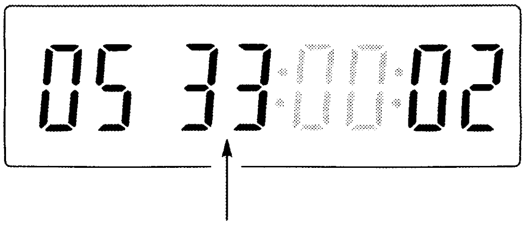
Head playback output voltage check

Cassette Used	Warning Display	Envelope Detection Output Voltage	Main Cause
Cassette with normal playback output	–	Envelope detection output (IC301 Pin 25 or R3032 Mark side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2) 	When the output voltage difference of the two channels is 0.5 to 0.95V • The video heads of both are normal
Recorded cassette (with tabs)	"L" blinking	Envelope detection output (IC301 Pin 25 or R3032 Mark side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2) 	When the output voltage difference of the two channels is more than 0.95V • Tracking adjustment has not been performed accurately • One video head is clogged • One video head has worn out
	"L" blinking	Envelope detection output (IC301 Pin 25 or R3032 Mark side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2) 	When the average output voltage of the two channels is less than 0.5V • Tracking adjustment has not been performed accurately • Both video heads are clogged • Both video heads have worn out
Rental cassette (without tabs)	"L" blinking	Envelope detection output (IC301 Pin 25 or R3032 Mark side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2) 	When the output voltage difference of the two channels is more than 0.95V • Tracking adjustment has not been performed accurately • One video head is clogged • One video head has worn out
	• Some rental cassettes may have extremely low video playback outputs even when both video heads are normal. As the average output voltage of the two heads may be less than 0.5V for some, no warning displays will be shown.		

3. Cylinder rotation accumulated time display

- Press the STOP button on the remote control for approximately 10 seconds and the cylinder rotation accumulated time excluding the cassette out and standby operation time will be displayed on the "Hours" display in units of 100 hours. ("33" will be displayed for 10 seconds for 3,200 to 3,299 hours.)
- To erase the cylinder rotation accumulated time display, press the RESET button on the remote control during the accumulated time display.

Display panel



Cylinder rotation accumulated display (Tape counter "Hours" display)

1. DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT, AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1-1-1)

1. Remove the cabinet and bottom cover by removing the four screws ① and four screws ②.
2. Remove the front panel by removing the locks of the clamps (A) using a screwdriver, etc. and slightly rotating the bottom part in the direction of the arrow.

Notes:
- Electrical adjustments for the this model can be performed with only the cabinet removed.
- When replacing the bottom cover, do not tighten the screws ② too much. Excess tightness may damage the screws taps on the chassis.

REMOVING THE MECHANISM MAIN UNIT AND THE CP-1 PWB ASSEMBLY (Fig. 1-1-2 and 1-1-3)

After removing the cabinet parts, remove the mechanism unit and the CP-1 PWB assembly connected as follows.

1. Spread out the lock clamps (C) in the arrow direction slightly and remove the TM-1 PWB as shown in Fig. 1-1-2.
2. Remove the screw ④ at the chassis.
3. Remove the screw ⑤ in the chassis, the screw ⑥, and the holder in this order.
4. Remove the two screws ⑦ and two screws ⑧ of the mechanism unit. The two screws ⑧ of the cassette tray can be removed easily by pushing the tray lock lever in the arrow direction to remove the lock as shown in the enlarge view A and by pushing the lid opener lever in the arrow direction to remove the lock as shown in the enlarge view B.
5. Lift up the whole mechanism unit and main board (CP-1 PWB assembly), and as shown in Fig. 1-1-3, push the two lock clamps (D) of the chassis in the arrow direction so that they can be removed from the chassis.

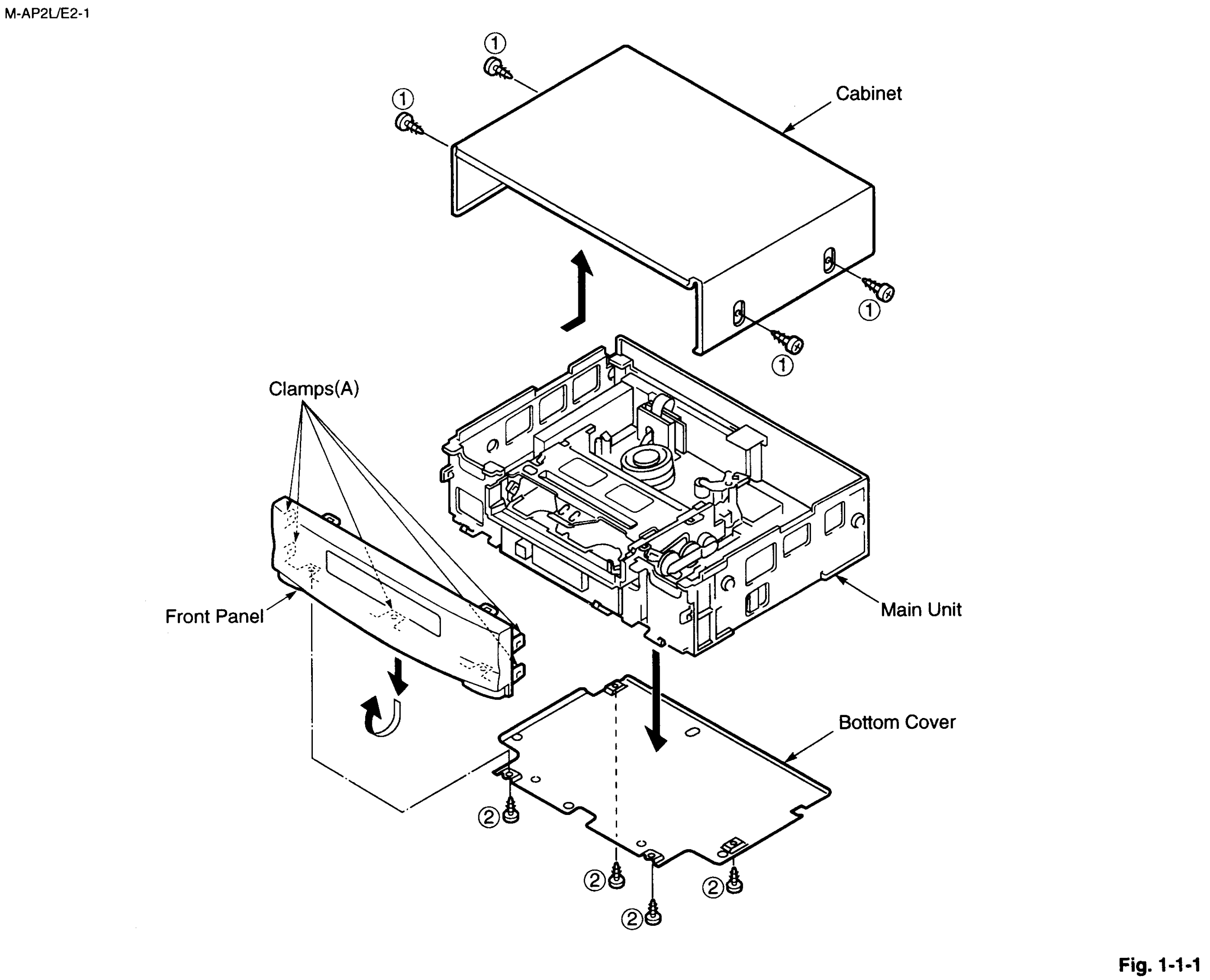


Fig. 1-1-1

M-PF2LN/TA-2

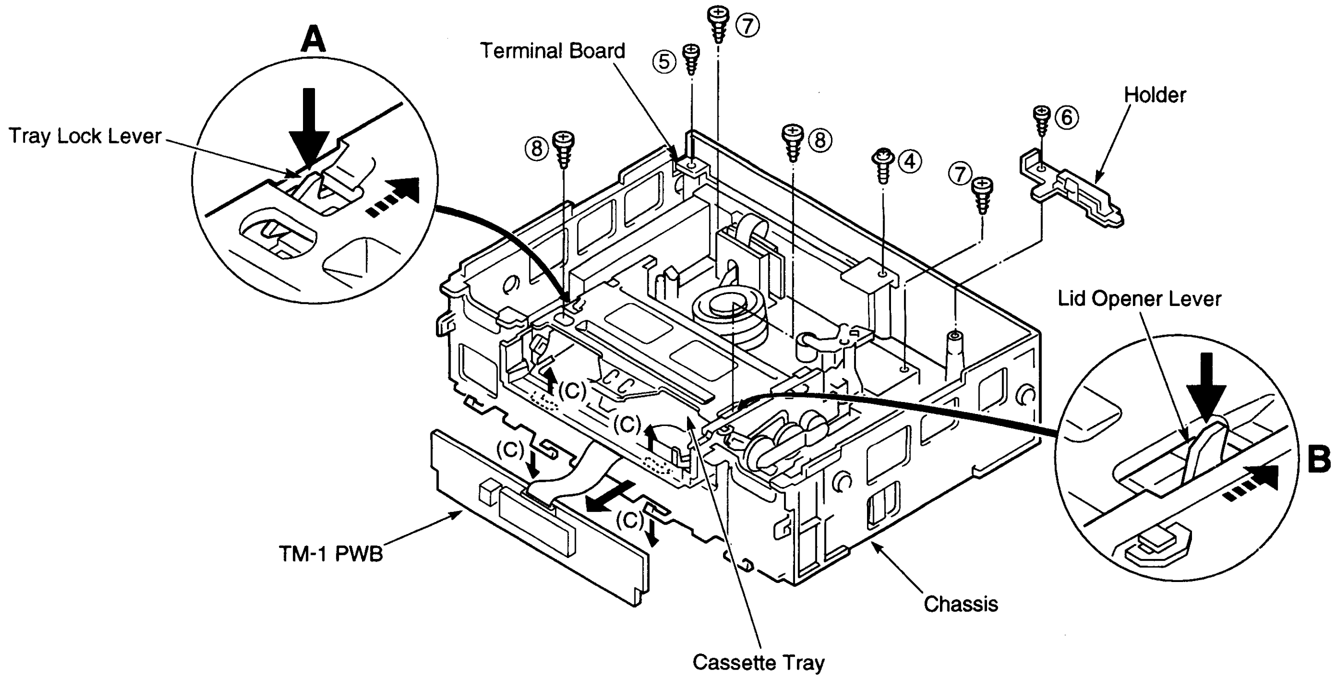

A
Tray Lock Lever
Terminal Board
⑦
⑤
⑧
⑧
④
⑦
⑥
Holder
Lid Opener Lever
(C)
(C)
(C)
(C)
B
TM-1 PWB
Chassis
Cassette Tray

Fig. 1-1-2

M-PF2LN/TA-3

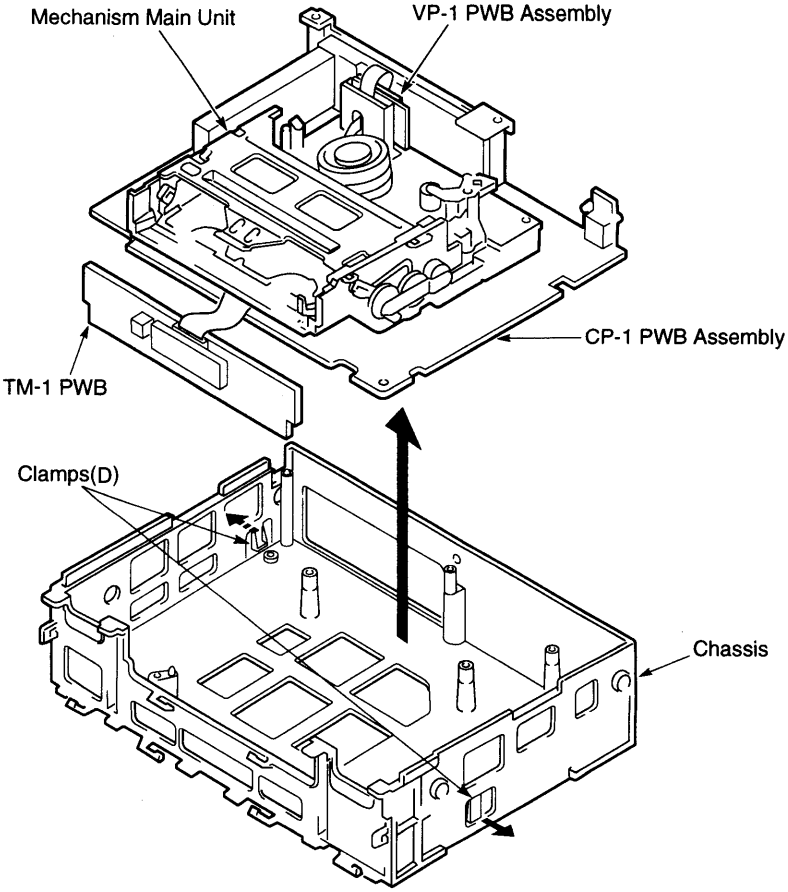

Mechanism Main Unit
VP-1 PWB Assembly
CP-1 PWB Assembly
TM-1 PWB
Clamps(D)
Chassis

Fig. 1-1-3

1-2. TEMPORARILY SETTING UP AND CONNECTING CP-1 PWB ASSEMBLY

The following is an example of how to place and connect the main board without a jig, when repairing the CP-1 PWB assembly.

1. Place the mechanism unit and main board up side down as a whole on a flat surface with foil side of the main board facing up.
2. Operete the unit using the buttons on TM-1 PWB or the remote control.

M-PF2LN/TA-4

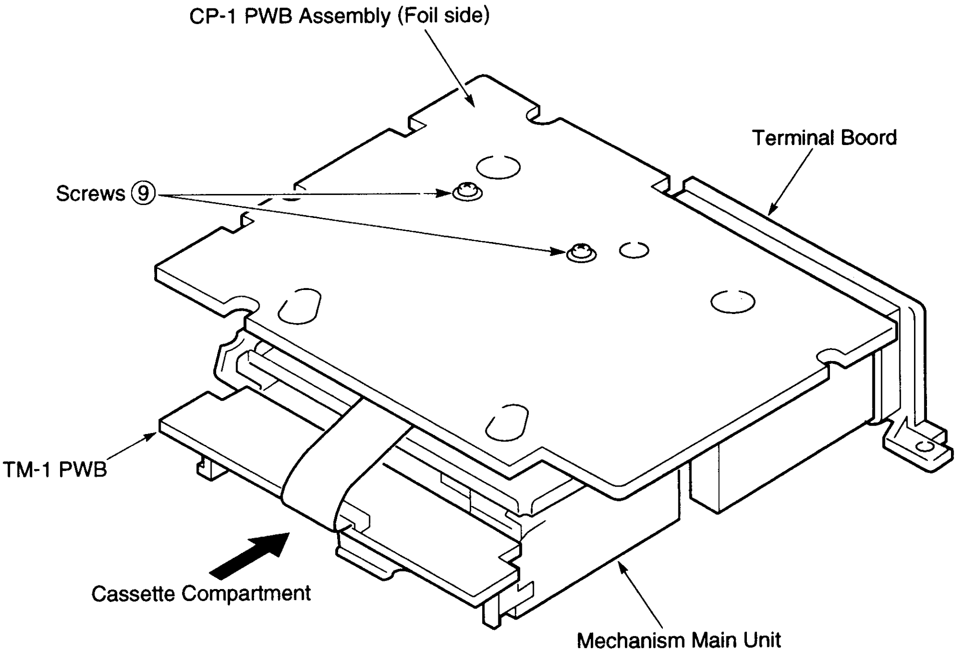

CP-1 PWB Assembly (Foil side)
Terminal Boord
Screws ⑨
TM-1 PWB
Cassette Compartment
Mechanism Main Unit

Fig. 1-1-4

1-3. INSTALLATION OF THE FRONT PANEL

When installing the front panel to the chassis after repaires and adjustments.

1. Pressing down the door opener lever of the mechanism main unit.
2. Set the cassette door to half-opened state as shown in Fig. 1-1-5, and install the front panel to the chassis.

Note: Opened cassette door position does not install the front panel to the chassis.

M-AA4H/CA2-5

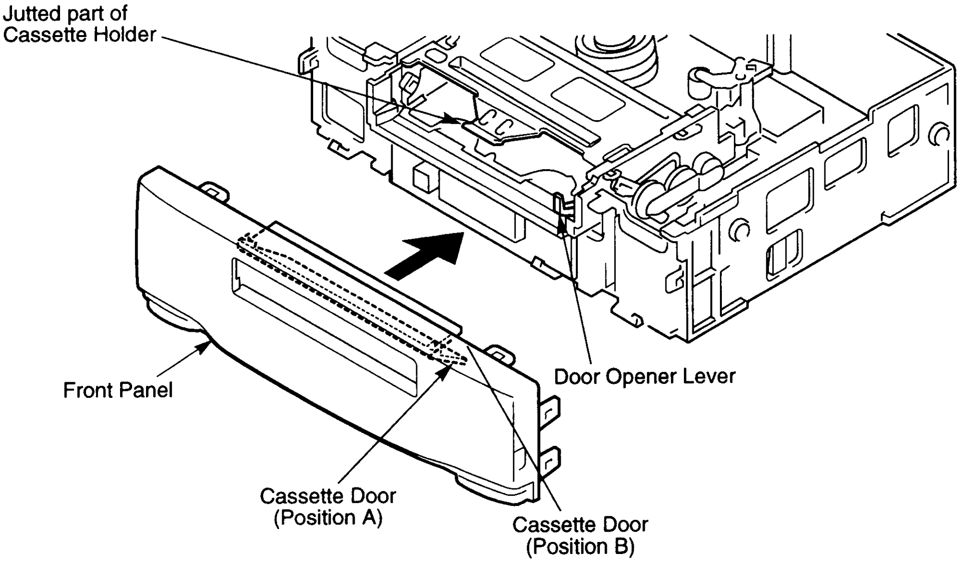
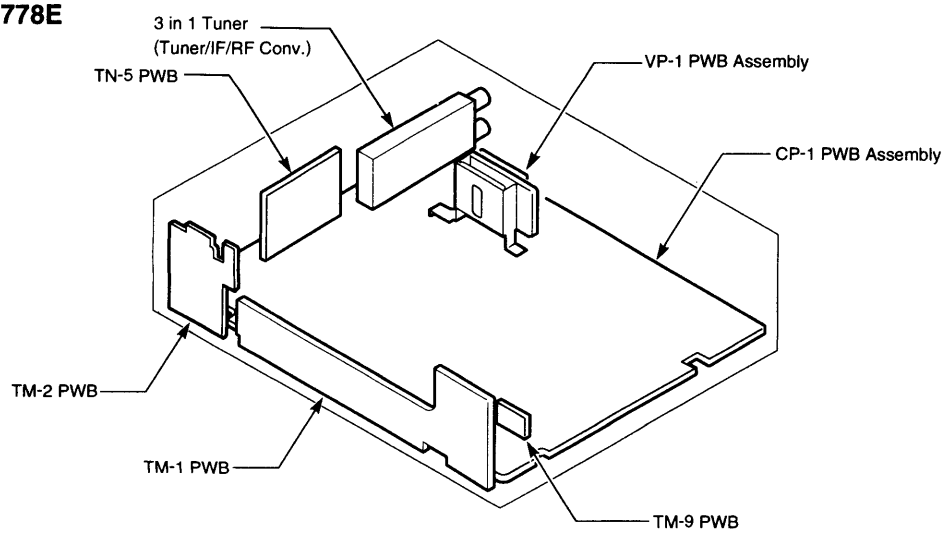

Jutted part of Cassette Holder
Front Panel
Door Opener Lever
Cassette Door (Position A)
Cassette Door (Position B)

Fig. 1-1-5

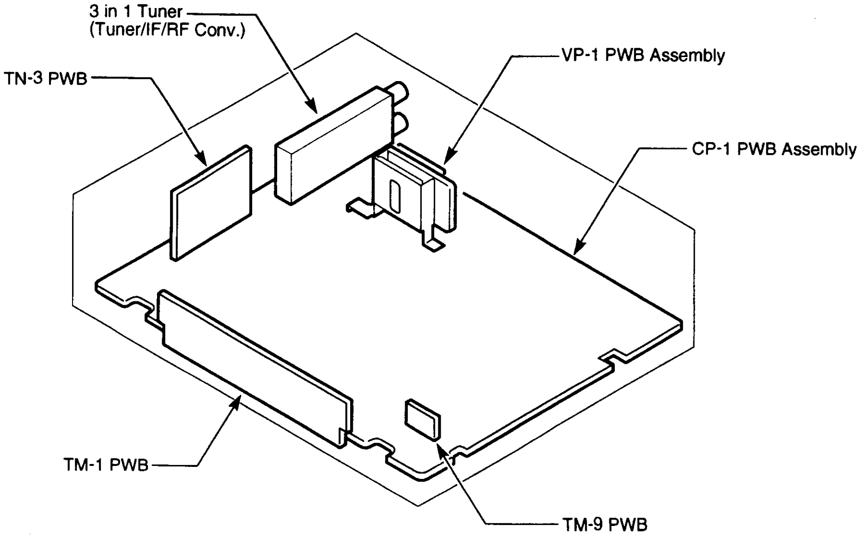
1-4. CIRCUIT BOARD LOCATIONS

L-AP4HN/E3, MP4H/G5, AP4HN/G2

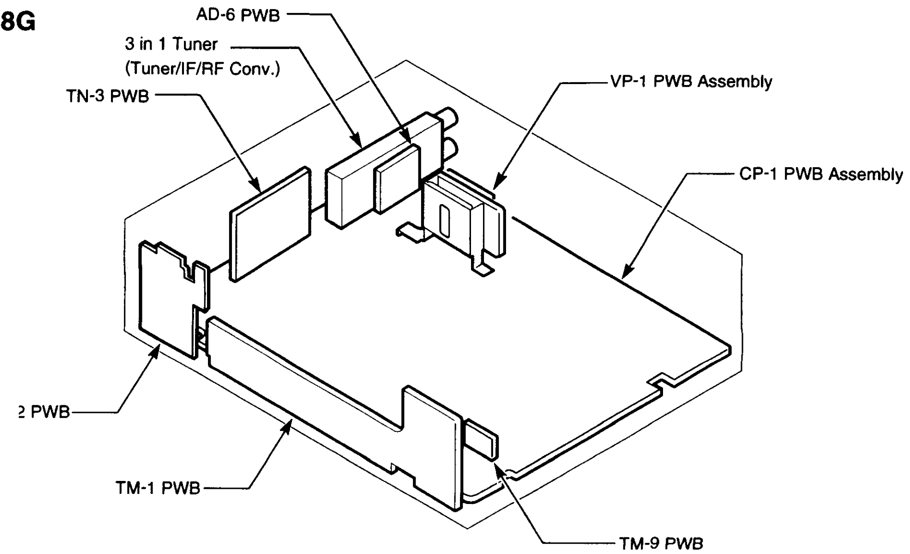
VHR-778E


3 in 1 Tuner
(Tuner/IF/RF Conv.)
TN-5 PWB
VP-1 PWB Assembly
CP-1 PWB Assembly
TM-2 PWB
TM-1 PWB
TM-9 PWB

VHR-778G


3 in 1 Tuner
(Tuner/IF/RF Conv.)
TN-3 PWB
VP-1 PWB Assembly
CP-1 PWB Assembly
TM-1 PWB
TM-9 PWB

VHR-788G


AD-6 PWB
3 in 1 Tuner
(Tuner/IF/RF Conv.)
TN-3 PWB
VP-1 PWB Assembly
CP-1 PWB Assembly
2 PWB
TM-1 PWB
TM-9 PWB

2. ELECTRICAL ADJUSTMENT

VCR PRESETTING

This VCR need three basic presetting by using the menus displayed on-screen. After all connection have been made, then follow steps 1 to 3 to preset the VCR.
The three presetting steps will be displayed in sequence on TV screen. The setting are entered with the remote control.

Turn on the VCR
1. Adjusting the TV receiver to the video channel: The AUTO SETUP screen will appear. When the video channel has been preset, press the OK button on the remote control.
2. Country selection: Using the numeric button, select the country of use.
3. Language selection: When the desired language has been select, press the MENU/TV button directly before prevent auto tuning will start.

When steps 1 to 3 have been finish, ready to operate the all operating mode.

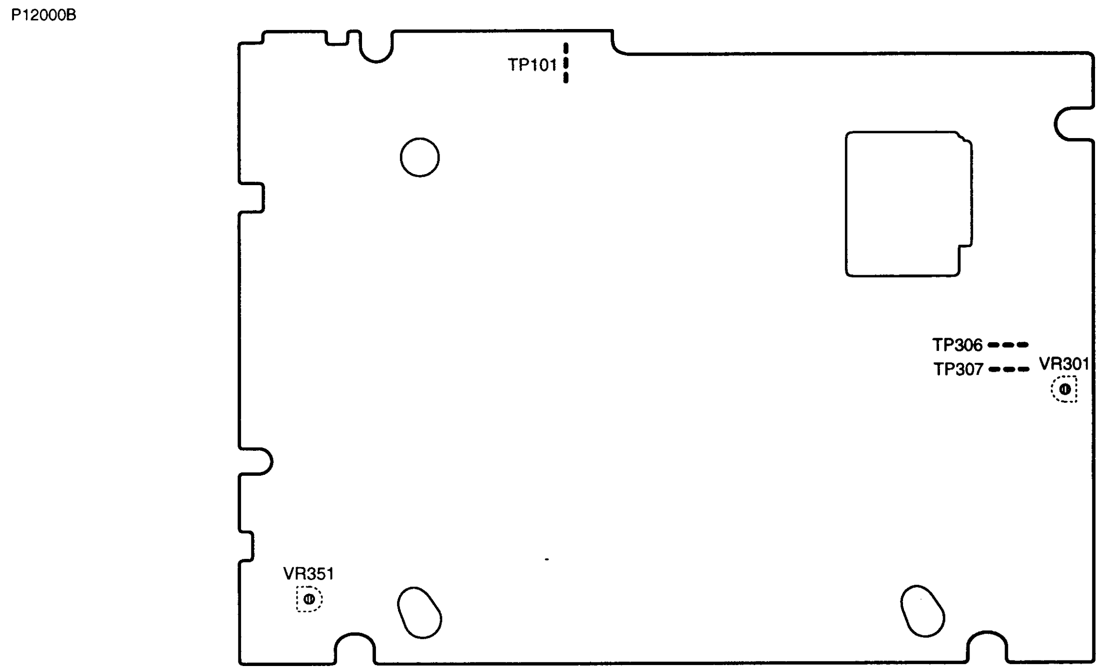
2-1. SERVO CIRCUIT ADJUSTMENT

- These adjustments should be done upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are done after these adjustments, follow the procedures again in section 2-1-3, "Switching position adj."
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. As this will daviate the tracking center set, be sure to press the channel buttons (+) and (−) once directly after starting playback to prevent auto-tracking from being set.

2-1-1. TEST EQUIPMENT AND STANDARDS REQUIRED

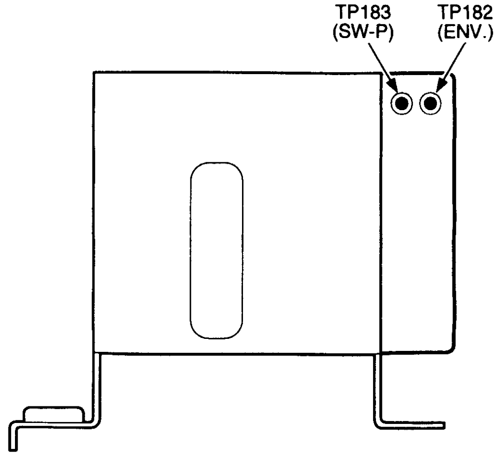
Oscilloscope	Vertical sensitivity Bandwidth	: 5 mV/DIV, external trigger : more than 10 MHz
Alignment Tape	VHJ-0009 or VHJ-0023	: SP mode, monoscope, 6 KHz
Blank Tape	VHS-type cassette tape	
Monitor TV		

2-1-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (Foil side)

Fig. 2-1-1


P66300D
TP183
(SW-P)
TP182
(ENV.)

VP-1 PWB Assembly

Fig. 2-1-2

2-1-3. SWITCHING POSITION ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP101 (VIDEO OUT) TP183 (SW-P)	Oscilloscope	PLAY (SP) mode Alignment tape (VHJ-0009 or VHJ-0023)

Adj. Location	Adj. Value
VR351 (SW-P)	6.5 H ± 0.5 H

1. Play back the alignment tape.
2. Set the tracking control position to the center by pressing CHANNEL buttons (+) and (−) simultaneously.
3. Adjust VR351 (SW-P) so that the width of "T" becomes 6.5 H ± 0.5 H as shown in Fig. 2-1-3.

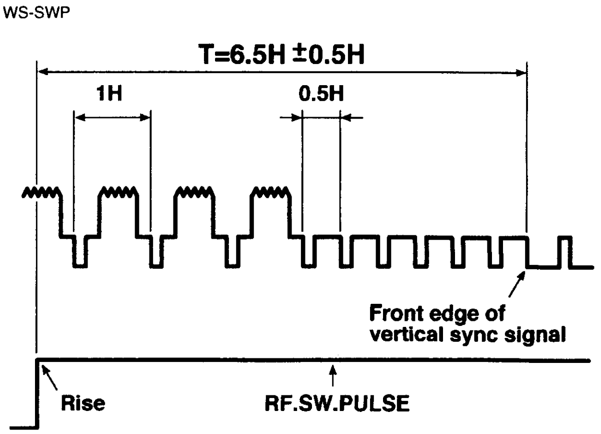

WS-SWP
T=6.5H ±0.5H
1H
0.5H
Front edge of
vertical sync signal
Rise
RF.SW.PULSE

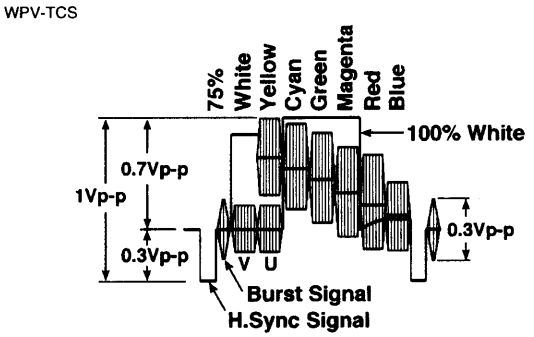
Fig. 2-1-3

2-2. VIDEO CIRCUIT RELAY JIG

2-2-1. TEST EQUIPMENT AND STANDARDS REQUIRED

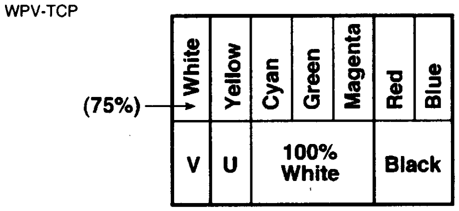
Color Bar Signal Generator	PAL Color bar signel with 100% white level (EBU color bar signel)
Oscilloscope	Vertical sensitivity : 5 mV/DIV, external trigger Bandwidth : more than 10 MHz
Oscilloscope Probe	Input capacity : less than 25 pF (10:1) less than 40 pF (1:1) Covering frequency : DC ~ 40 MHz (10:1) DC ~ 30 MHz (1:1)
Digital Voltmeter	DC range
Alignment Tape	VHJ-0008 or VHJ-0023 : SP mode, color bar, 1 kHz (Color bar signal waveform is described below. Refer to Fig. 2-2-1)
Relay Jig	VHJ-0067 : 12-wire flat cable for VP-1 PWB assembly

ALIGNMENT TAPE COLOR BAR SIGNAL


WPV-TCS
75%
White
Yellow
Cyan
Green
Magenta
Red
Blue
100% White
0.7Vp-p
1Vp-p
0.3Vp-p
0.3Vp-p
V U
Burst Signal
H.Sync Signal

Color bar signal waveform (VHJ-0008)

Fig. 2-2-1


WPV-TCP
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
V
U
100% White
Black

Color bar pattern (VHJ-0008) on monitor TV

Fig. 2-2-2

RELAY JIG

Connect the flat cable end from the cylinder assembly to the VP-1 PWB assembly using the relay jig to provide simple repairing of the VP-1 PWB assembly, as shown in Fig.2-2-3. Further, when adjusting the VP-1 PWB assembly, be sure to make contact an end of shield case with bracket of the VP-1 PWB assembly to maintain the shield effect. If the VP-1 PWB assembly does not contact, there is insufficient ground and no proper play back image can be obtained.

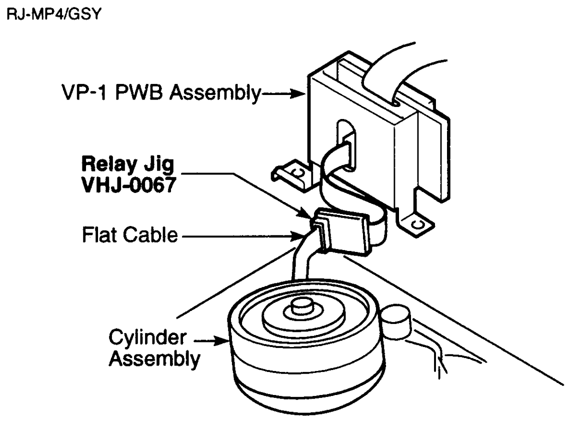

RJ-MP4/GSY
VP-1 PWB Assembly
Relay Jig
VHJ-0067
Flat Cable
Cylinder
Assembly

Fig. 2-2-3

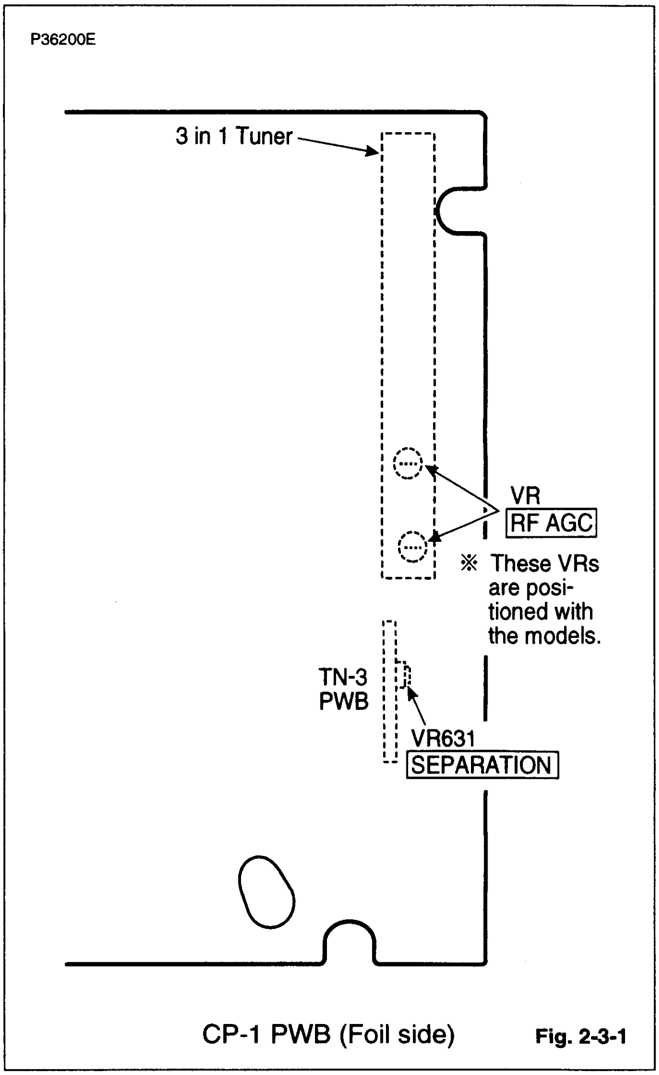
2-3. MTS DECODER CIRCUIT ADJUSTMENT for VHR-778G and VHR-788G

- If adjusting the MTS Decoder circuit, special equipment shown in section 2-4-1. is necessary.
- Improper adjustment will cause loss of performance of stereo sound and bilingual sound detection.
- Before making these adjustments, be sure to make the adjustments described in section 2-1. " Servo Circuit.", section 2-2. "Video Circuit Relay Jig."

2-3-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Audio Multiplex TV signal Generator	
Oscilloscope	
AC Voltmeter	
Low Path Filter	15 kHz (48dB/oct)

2-3-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (Foil side) **Fig. 2-3-1**

Note:

- Set the following remote control button to the positions indicated below, before making following adjustments.

REMOTE CONTROL BUTTON	POSITION
TAPE SPEED	SP
INPUT	AV
AUDIO	LR

2-3-3. SEPARATION ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
AUDIO OUTPUT terminal EURO pin3 (Lch)	Audio Multiplex TV signal generator Oscilloscope Low path filter 15 kHz (48 dB/oct)	E-E mode

Adj. Location	Adj. Value
VR631 (SEPARATION)	Minimum level

1. Input the output signal of the audio multiplex TV signal generator into the VCR ANT input terminal.
2. Connect the oscilloscope to the audio output terminal EURO pin 3 (Lch) of the VCR via the LPF.
3. Set the audio multiplex TV signal generator as follows.
   Audio signal Rch: 1 kHz 30% modulation
   Audio signal Lch: Unmodulation
4. Adjust VR631 (SEPARATION) so that the output of the audio output terminal (Lch) is brought to its minimum level.

2-4. IF CIRCUIT ADJUSTMENT

- In this model, the circuits of the TUNER, IF, and RF converter have been made into one. Therefore, should one circuit malfunction, the whole unit must be replaced.
- The adjustments for the IF (RF AGC) circuit of the 3 in 1 tuner are described below.

Note: The 3 in tuner dose not need any adjustments, because precise adjustments were down before shipment.

2-4-1. TEST EQUIPMENT AND STANDARD REQUIRED

Monitor TV	

2-4-2. LOCATION OF ADJUSTMENT POINT

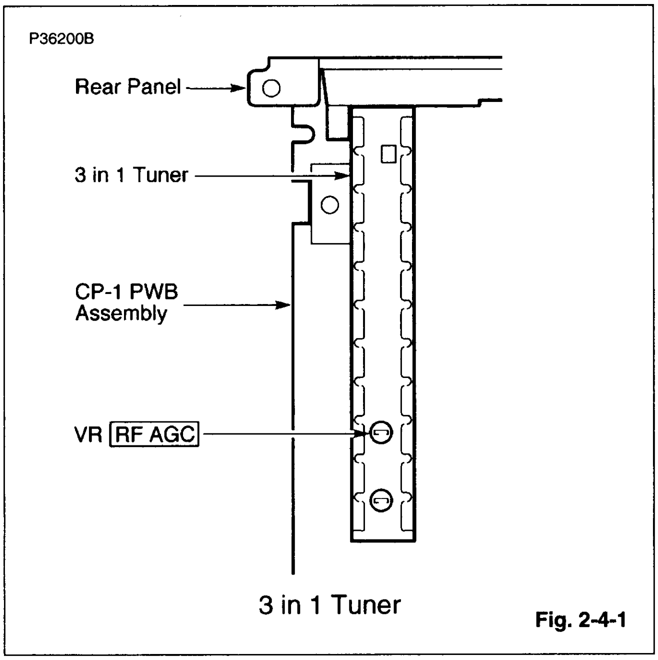


Fig. 2-4-1

2-4-3. RF AGC ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
Picture of monitor TV	Monitor TV	E-E mode

Adj. Location	Adj. Value
VR (RF AGC) (on the 3 in 1 tuner)	S/N is best point

1. Connect the monitor TV to the VHF/UHF antenna output terminal.
2. Connect the VHF or UHF antenna to the VHF/UHF antenna input terminal.
3. Receive the middle electrical field (70 dBμ ~ 90 dBμ) of the VHF or UHF channel, and slowly turn the VR (RF AGC) from the point where snow-noise is present to the point where it just disappears from the monitor TV.
4. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

2-5 . CHECKING THE RF CHANNEL

If the TV and VCR are connected by an aerial output cable which has poor shielding characteristics, turn off the RF converter of the VCR and use the VCR with an AV cable. To turn the RF converter off, input "00" when setting the RF (when "RF" is displayed) during VCR pre-setting.

3. TEST POINTS FOR TAPE PATH ADJUSTMENT

Test points TP182 (ENV) and TP183 (SW-P) for tape path adjustment are shown in figure below.
For adjustment, refer to the separate volume "V95 I Mechanism Manual" (MM531433) and "V95 II Mechanism Manual" (MS531500).

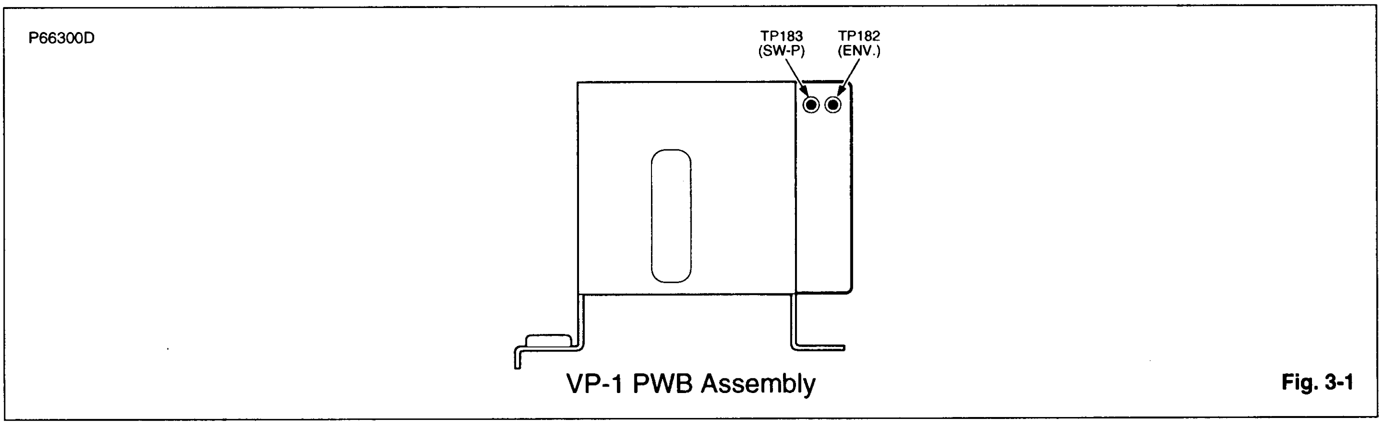


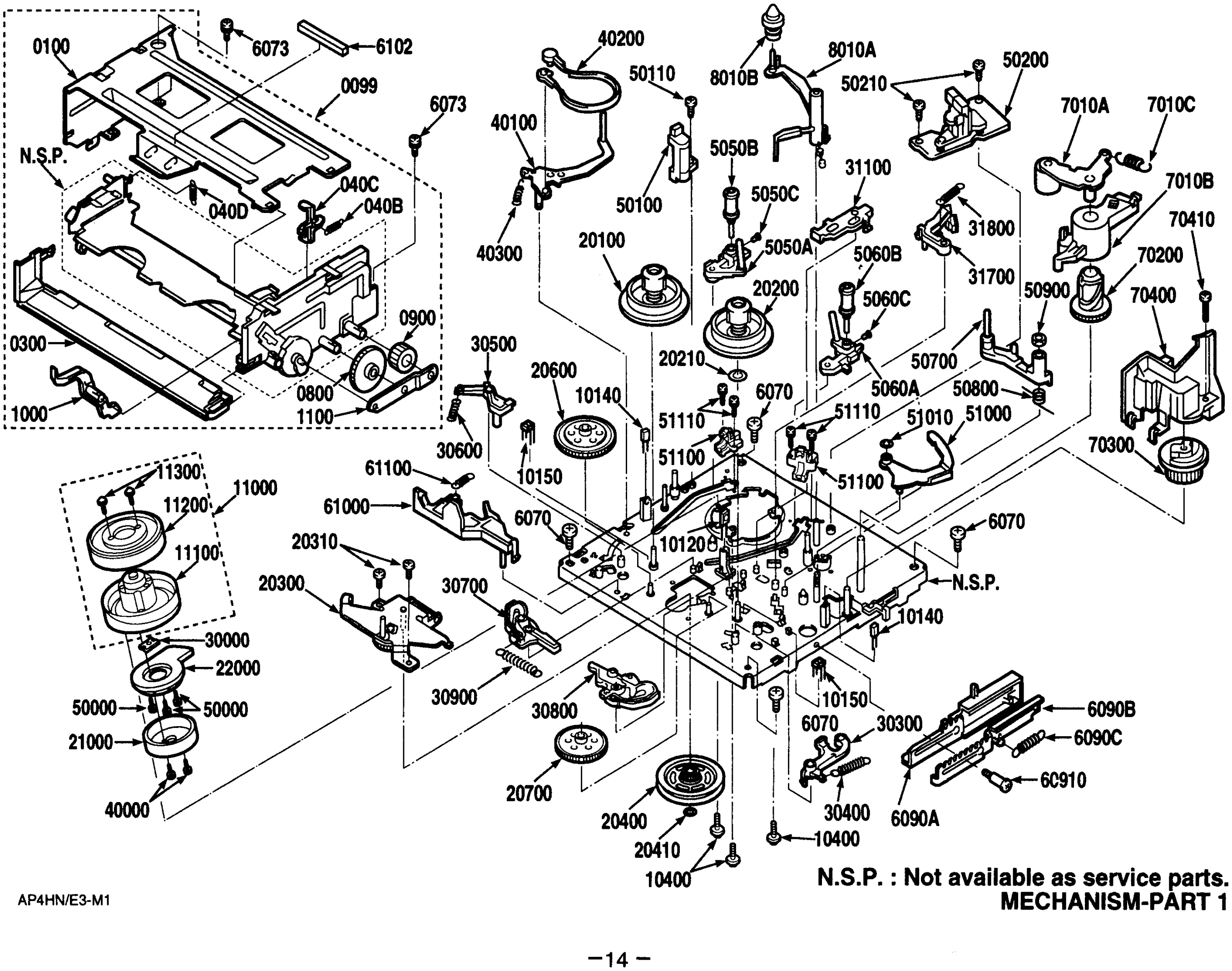
Fig. 3-1

4. PARTS LIST
MECHANISM PARTS

MECHANISM PARTS 1

LOCATION	PARTS NO.	DESCRIPTION
11000	613 164 5981	COMPL,CYLINDER,4H6P-R2
11100	613 096 2751	ASSY,CYLINDER,LWR 6K
11200	613 164 6001	ASSY,CYLINDER,UPR 4H6P-R2
11300	411 038 1608	SCR PAN+W 3X8
21000	645 015 7875	MOTOR,ROTOR,CYL DC 2W
22000	645 015 7868	MOTOR,STATOR,CYL DC 2W
OR	645 026 7802	MOTOR,STATOR,CYL DC 2W
30000	613 097 2170	SPACER,MOTOR
40000	412 036 5001	SPECIAL SCREW 2.3X6
50000	412 036 4905	SPECIAL SCREW 2.3X10
0099	613 152 0578	COMPL,CASSETTE MECHANISM
0100	613 152 0738	STAND L
0300	613 152 0660	FRAME UNDER
040B	613 152 0417	SPRING,LID OPENER
040C	613 152 0707	LEVER,RELEASE
040D	613 152 0424	SPRING,TRAY LOCK
0800	613 152 2794	GEAR,LOCK
0900	613 152 2800	GEAR,PINION
1000	613 151 9480	LEVER,DOOR OPENER
1100	613 151 9299	HOLDER,GEAR
6070	411 021 7907	SCR S-TPG BIN 4X12
6073	412 048 8205	SPECIAL SCREW-2.6X6
6102	613 151 6618	PAD
10120	407 162 1102	LED LN59L(D8003)
10140	407 162 8705	PHOTO DIODE PN263L-(NC) (D8001,D8002) S,T SENSOR
10150	407 165 8108	PHOTO COUPLE SG-105F (PC801),(PC802:VHR-778E ONLY)
10150	407 043 0101	PHOTO DIODE ON2170-R (PC801),(PC802:VHR-778E ONLY)
10400	412 052 6204	SPECIAL SCREW-2.6X5.5
20100	613 169 3722	ASSY,REEL SUPPLY,VHR-778E ONLY
OR	613 176 2343	ASSY,REEL SUPPLY,VHR-778E ONLY
20100	613 169 0974	REEL,SUPPLY,EXCEPT VHR-778E
OR	613 160 5503	ASSY,REEL SUPPLY,EXCEPT VHR-778E
20200	613 160 4193	ASSY,REEL TAKE UP
OR	613 168 1514	ASSY,REEL TAKE UP
20210	412 015 8504	SPECIAL WASHER 3.1X6X0.5
OR	412 021 5306	SPECIAL WASHER 3.1X6X0.3
OR	412 015 8900	SPECIAL WASHER 3.1X6X0.4
20300	613 175 0661	COMPL,MOUNTING CLUTCH
OR	613 171 6896	COMPL,MOUNTING CLUTCH
20310	412 048 7505	SPECIAL SCREW-2.6X4
20400	613 151 9701	PULLEY,REEL
20410	412 045 4606	SPECIAL WASHER 2.4X6X0.25
20600	613 152 2749	GEAR,REEL S
20700	613 152 2756	GEAR,REEL T
30300	613 160 3356	ASSY,BRAKE SOFT T
30400	613 152 0295	SPRING,SOFT T
30500	613 151 9411	LEVER,SOFT S
30600	613 152 0318	SPRING,SOFT S
30700	613 160 6166	ASSY,BRAKE,S
30800	613 159 2193	ASSY,BRAKE T
30900	613 163 6996	SPRING,BRAKE
31100	613 152 0189	SLIDE,ACT BRAKE T
31700	613 151 8490	ASSY,BRAKE CAPSTAN
31800	613 152 0356	SPRING,BRAKE CAPSTAN
40100	613 151 8759	ASSY,LEVER,BT
40200	613 160 5282	ASSY,BRAKE,BAND

Note:
Location No. 8010A and 8010B are used on VHR-788G ONLY

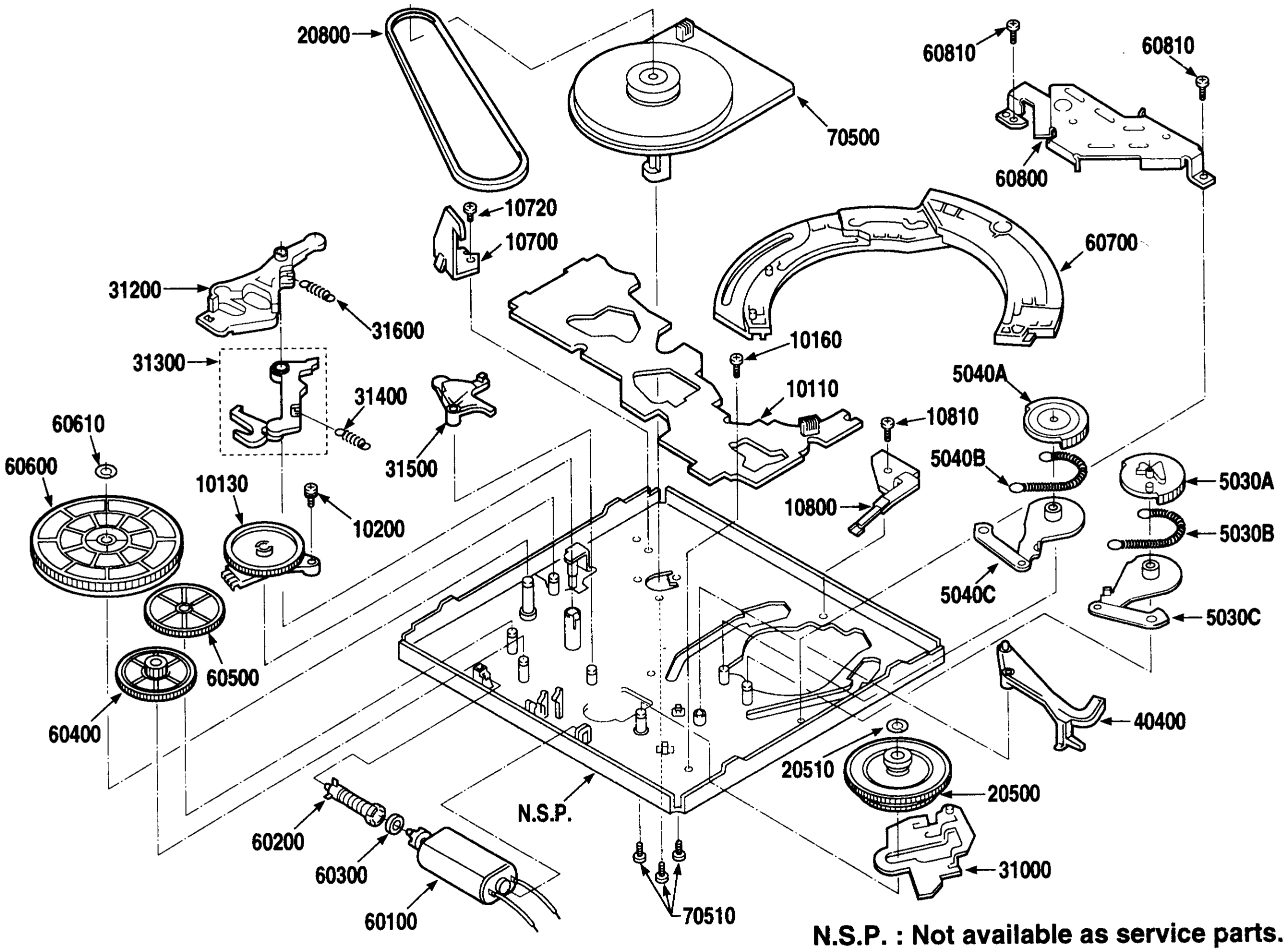

0100
6073
6102
0099
6073
N.S.P.
040C
040D
040B
0300
0900
0800
1100
1000
11300
11000
11200
11100
30000
22000
50000
50000
21000
40000
40200
50110
40100
40300
50100
20100
30500
30600
20600
10140
10150
61100
61000
20310
20300
30700
30900
30800
20700
20400
20410
10400
8010B
8010A
50210
50200
5050B
5050C
5050A
31100
20200
20210
6070
51110
51100
10120
6070
5060B
5060C
5060A
31800
31700
50700
50800
51110
51100
51010
51000
7010A
7010C
7010B
70410
70200
50900
70400
70300
6070
N.S.P.
10140
10150
6070
30300
30400
10400
6090B
6090C
60910
6090A

N.S.P. : Not available as service parts.
MECHANISM-PART 1

LOCATION	PARTS NO.	DESCRIPTION
40300	613 152 0271	SPRING,BT
50100	645 017 6432	HEAD,ERASE FULL
50110	412 048 9707	SPECIAL SCREW-2.6X10
50200	613 176 8406	ASSY,HEAD R/P ACE
50210	412 052 3500	SPECIAL SCREW 2.6X12
5050A	613 164 7237	ASSY,MOUNTING,INCLINE S
5050B	613 022 0233	ASSY,GUIDE,ROLLER
5050C	412 048 4504	SPECIAL SCREW-2X3
5060A	613 164 7251	ASSY,MOUNTING,INCLINE T
5060B	613 022 0233	ASSY,GUIDE,ROLLER
5060C	412 048 4504	SPECIAL SCREW-2X3
50700	613 164 4762	ASSY,LEVER,LOAD
50800	613 152 0387	SPRING,LEVER L GUIDE
50900	412 048 8908	SPECIAL NUT-3X3
51000	613 173 6153	ASSY,LEVER,ACT L GUIDE
OR	613 161 2365	ASSY,LEVER,ACT L GUIDE
51010	412 033 4106	WASHER SLIT 2.6X5X0.50
51100	613 160 7057	MOUNTING,CATCHER
51110	412 049 1700	SPECIAL SCREW-2.6X10
6090A	613 151 9152	GEAR,RACK FRONT
OR	613 160 4636	GEAR,RACK FRONT
6090B	613 151 9114	GEAR,RACK START
6090C	613 152 0226	SPRING,RACK FRONT
60910	412 050 2802	SPECIAL SCREW-2.6X6
61000	613 151 9398	LEVER,EP SW
61100	613 152 3692	SPRING,EP SW
7010A	613 151 8803	ASSY,LEVER,PINCH ROLLER
OR	613 175 1194	ASSY,LEVER,PINCH ROLLER
7010B	613 171 0221	MOUNTING,LIFT PINCH
7010C	613 152 0233	SPRING,PINCH ROLLER
70200	613 156 3841	CAM,LIFT PINCH
70300	613 152 0677	GEAR,CAM PINCH
70400	613 152 0714	MOUNTING,OPENER
70410	412 049 1106	SPECIAL SCREW-2.6X16
8010A	613 171 9606	LEVER,CLEANER,VHR-788G ONLY
8010B	613 171 9439	ASSY,MOUNTING CLEANER,VHR-788G ONLY

MECHANISM PARTS 2

LOCATION	PARTS NO.	DESCRIPTION
10110	613 173 9451	COMPL PWB,MC-1,EXCEPT VHR-778E
10110	613 175 0913	COMPL PWB,MC-1,VHR-778E ONLY
10130	645 007 1560	SWITCH,MODE(S8001)
10160	412 048 7505	SPECIAL SCREW-2.6X4
10200	412 048 8304	SPECIAL SCREW-2.6X8
10700	613 167 5926	MOUNTING CAPSTAN
10720	412 048 8007	SPECIAL SCREW-2.6X6
10800	613 165 8523	ASSY,EARTH CYL
10810	412 048 8007	SPECIAL SCREW-2.6X6
20500	613 160 4186	ASSY,GEAR,FRICTION
20510	411 109 1605	WASHER Y 2.6X6X0.25
20800	613 151 9039	BELT,REEL
31000	613 152 0165	SLIDE,ACT BRAKE S
31200	613 159 0991	LEVER,CONTROL BRAKE
31300	613 159 0847	COMPL,LEVER,ACT BRAKE
31400	613 152 0332	SPRING,RETURN BRAKE
31500	613 151 9459	LEVER,CHANGE CLUTCH
31600	613 152 0349	SPRING,CHANGE CLUTCH
40400	613 153 7583	ASSY,LEVER SPRING BT
5030A	613 152 2763	GEAR,LOAD S
5030B	613 152 0370	SPRING,LOAD S
5030C	613 160 3691	ASSY,LEVER,LOAD S
5040A	613 152 2770	GEAR,LOAD T
5040B	613 152 0363	SPRING,LOAD T
5040C	613 160 3707	ASSY,LEVER,LOAD T
60100	645 003 4305	ASSY,MOTOR LOADING
60200	613 151 8599	COMPL,GEAR,WORM
60300	613 151 9107	DAMPER
60400	613 151 9138	GEAR,WHEEL 1
60500	613 160 3790	GEAR,WHEEL 2
60600	613 156 4008	CAM,MAIN
60610	412 054 6806	SPECIAL WASHER 3.6X0.5
60700	613 159 9017	SLIDE,CRESCENT
60800	613 159 8997	MOUNTING,CRESCENT
60810	412 048 8007	SPECIAL SCREW-2.6X6
70500	645 026 7826	MOTOR,CAPSTAN DC 3W
70510	412 048 7604	SPECIAL SCREW-2.6X6



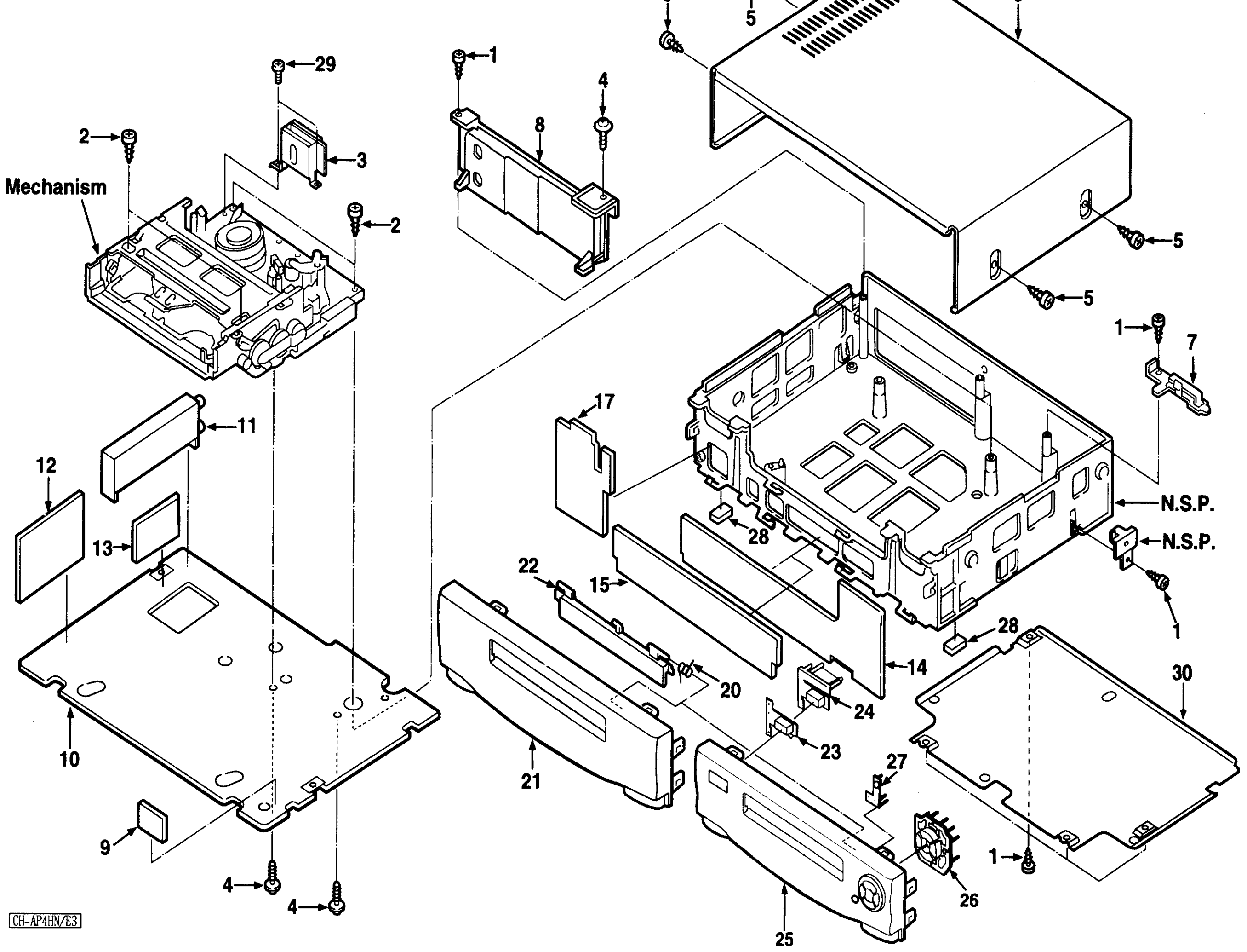
N.S.P. : Not available as service parts.

MECHANISM-PART 2

CABINET & CHASSIS PARTS

LOCATION	PARTS NO.	DESCRIPTION
1	411 137 0007	SCR L-TPG BIN 3X10
2	411 021 7907	SCR S-TPG BIN 4X12
3	613 178 7841	COMPL PWB,VP-1,VHR-778E ONLY
3	613 179 0124	COMPL PWB,VP-1,EXCEPT VHR-778E
4	412 052 5108	SPECIAL SCREW-2.6X12
5	412 028 9406	SPECIAL SCREW
6	613 177 5398	COVER TOP,VHR-788G ONLY
6	613 161 2952	COVER TOP,VHR-788G ONLY
6	613 177 5404	COVER TOP,EXCEPT VHR-788G
6	613 163 4794	COVER TOP,EXCEPT VHR-788G
7	613 160 2885	HOLDER
8	613 173 3244	TERMINAL
9	613 179 1091	COMPL PCB,TM-9
10	613 179 5600	COMPL PWB,CP-1-A,VHR-788G ONLY
10	613 180 4128	COMPL PWB,CP-1-A,VHR-778G ONLY
10	613 179 5563	COMPL PWB,CP-1-A,VHR-778E ONLY
11	645 019 0117	TUNER,RF/TU/IF,VHR-778E ONLY
11	645 019 0070	TUNER,RF/TU/IF,EXCEPT VHR-778E
12	613 173 4470	COMPL PWB,TN-3,EXCEPT VHR-778E
12	613 161 6226	COMPL PWB,TN-5,VHR-778E ONLY
13	613 179 8366	COMPL PWB,AD-6,VHR-788G ONLY
14	613 179 2388	COMPL PWB,TM-1,VHR-778E ONLY
14	613 178 9944	COMPL PWB,TM-1,VHR-788G ONLY
15	613 179 3002	COMPL PWB,TM-1,VHR-778G ONLY
17	613 178 9951	COMPL PWB,TM-2,VHR-788G ONLY
17	613 179 2395	COMPL PWB,TM-2,VHR-778E ONLY
20	613 153 0478	SPRING
21	613 180 3152	ASSY,CABINET FRONT SID,VHR-778G ONLY
22	613 180 3275	DOOR CASSETTE,VHR-778G ONLY
22	613 179 5174	DOOR CASSETTE,VHR-788G ONLY
22	613 179 3149	DOOR CASSETTE,VHR-778E ONLY
23	613 178 9777	BUTTON,VHR-788G ONLY
24	613 179 0285	HOLDER,VHR-788G ONLY
24	613 179 3125	BUTTON,VHR-778E ONLY
25	613 179 4993	ASSY,CABINET FRONT SID,VHR-788G ONLY
25	613 179 3118	ASSY,CABINET FRONT SID,VHR-778E ONLY
26	613 179 5051	BUTTON 5P,VHR-788G ONLY
26	613 178 9760	BUTTON 5P,VHR-778E ONLY
27	613 178 9784	BUTTON,VHR-778E ONLY
27	613 179 5068	BUTTON,VHR-788G ONLY
28	613 121 1001	STAND,FELT,(FRONT)
29	411 001 1901	SCR S-TPG BIN 3X6
30	613 160 5091	COVER BOTTOM

N.S.P.:Not available as service parts



ELECTRICAL PARTS

Note:

1. Materials of Capacitors and Resistors are abbreviated as follows ;

Resistors	
MT-FILM	Metallized Film Resistor
MT-GLAZE	Metallized Glaze Resistor
OXIDE-MT	Oxide Metallized Film Resistor

Capacitors	
MT-POLYEST	Metallized Polyester Capacitor
MT-COMPO	Metallized Composite Capacitor
TA-SOLD	Tantalum Solid Capacitor
AL-SOLID	Aluminum Solid Capacitor
NP-ELECT	Non-Polarized Electrolytic Capacitor
OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
DL-ELECT	Double Layered Electrolytic Capacitor

2. Tolerance of Capacitor (10pF over) and Resistor are noted with follow symboles.

F ....1% G ....2% J ....5% K 10%
M ....20% N ....30% Z ....+80% ~ -20%

3. Capacitors

U : μF P : pF

4. Inductors

UH : μH MH : mH

5. N.S.P. : Not available as service parts.

COMPL PWB,CP-1-A

LOCATION	PARTS NO.	DESCRIPTION
	613 179 5600	VHR-788G ONLY
	613 180 4128	VHR-778G ONLY
	613 179 5563	VHR-778E ONLY
	(CONNECTORS)	
CN231	645 026 1626	SOCKET,RGB 21P (N.S.P)
OR	645 021 1515	SOCKET,RGB 21P (N.S.P)
CN301	645 009 4361	SOCKET,FFC 31P (N.S.P)
OR	645 005 4761	SOCKET,31P (N.S.P)
CN303	645 007 8422	PLUG,12P (N.S.P)
CN351	645 007 8927	PLUG,6P (N.S.P)
CN352	645 008 1842	PLUG,8P (N.S.P)
CN501	⚠ 645 000 5411	SOCKET,INLET AC (N.S.P)
OR	⚠ 645 028 4885	SOCKET,INLET AC (N.S.P)
	(SEMICONDUCTORS)	
Q1002	405 035 6100	TR 2SC2413K-Q
Q1004	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q1005	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q1007	405 002 0308	TR 2SA1037K-R
OR	405 002 0407	TR 2SA1037K-S
Q1101	405 002 0308	TR 2SA1037K-R
OR	405 002 0407	TR 2SA1037K-S
Q1102	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q1301	405 006 1806	TR 2SA933S-R
Q1304	405 002 0308	TR 2SA1037K-R
OR	405 002 0407	TR 2SA1037K-S
Q1402	405 002 0308	TR 2SA1037K-R
OR	405 002 0407	TR 2SA1037K-S
Q2021	405 018 0002	TR 2SC3331-S
OR	405 018 0101	TR 2SC3331-T
OR	405 018 0200	TR 2SC3331-U
Q2022	405 025 0200	TR 2SD734-G
OR	405 024 9907	TR 2SD734-F
Q2023	405 003 5609	TR 2SA1318-S
OR	405 003 5708	TR 2SA1318-T
OR	405 003 5807	TR 2SA1318-U
Q2024	405 018 0002	TR 2SC3331-S
OR	405 018 0101	TR 2SC3331-T
OR	405 018 0200	TR 2SC3331-U
Q2025	405 018 0002	TR 2SC3331-S
OR	405 018 0101	TR 2SC3331-T
OR	405 018 0200	TR 2SC3331-U
Q2302	405 006 6702	TR 2SA984-F
OR	405 006 7204	TR 2SA984K-F
Q2341	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q2342	405 015 8407	TR 2SC2812-L5
Q2342	405 014 4608	TR 2SC2412K-S
OR	405 015 8704	TR 2SC2812-L6
OR	405 014 4509	TR 2SC2412K-R
Q3051	405 018 1900	TR 2SC3395,EXCEPT VHR-778E
OR	405 029 3504	TR DTC144EK,EXCEPT VHR-778E
Q3052	405 000 0409	TR DTA114EK,EXCEPT VHR-778E
Q3201	405 014 4509	TR 2SC2412K-R,VHR-778E ONLY
OR	405 014 4608	TR 2SC2412K-S,VHR-778E ONLY
Q3202	405 014 4509	TR 2SC2412K-R,VHR-778E ONLY
OR	405 014 4608	TR 2SC2412K-S,VHR-778E ONLY
Q3301	405 000 5305	TR DTC143TK,VHR-778E ONLY
Q3302	405 000 2007	TR DTA144EK,VHR-778E ONLY
Q3401	405 084 8209	TR 2SC2960-F-SPA,VHR-778E ONLY
OR	405 084 8308	TR 2SC2960-G-SPA,VHR-778E ONLY
Q3504	405 029 3504	TR DTC144EK
Q3551	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q3552	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q3553	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q3554	405 029 3504	TR DTC144EK
Q3581	405 029 3504	TR DTC144EK
Q5001	405 126 0208	TR 2SK1460LS,VHR-778E ONLY
Q5002	405 089 2202	TR 2SC4483-T,EXCEPT VHR-778E
Q5002	405 013 7006	TR 2SC2274-F,VHR-778E ONLY
OR	405 013 7303	TR 2SC2274K-F,VHR-778E ONLY
Q5003	405 006 6702	TR 2SA984-F,VHR-778E ONLY
OR	405 006 7204	TR 2SA984K-F,VHR-778E ONLY
Q5004	405 013 7006	TR 2SC2274-F,VHR-778E ONLY
OR	405 013 7303	TR 2SC2274K-F,VHR-778E ONLY
Q5101	405 089 2103	TR 2SC4483-S
OR	405 089 2202	TR 2SC4483-T
OR	405 104 3108	TR 2SD1858-Q
OR	405 029 4501	TR 2SD1858-R
Q5102	405 089 2103	TR 2SC4483-S
OR	405 089 2202	TR 2SC4483-T
OR	405 104 3108	TR 2SD1858-Q
OR	405 029 4501	TR 2SD1858-R
Q5103	405 013 6801	TR 2SC2274-E
OR	405 013 7006	TR 2SC2274-F
OR	405 013 7204	TR 2SC2274K-E
OR	405 013 7303	TR 2SC2274K-F
Q5104	405 125 3200	TR 2SC5070,EXCEPT VHR-778E
Q5104	405 089 2103	TR 2SC4483-S,VHR-778E ONLY
OR	405 089 2202	TR 2SC4483-T,VHR-778E ONLY
OR	405 104 3108	TR 2SD1858-Q,VHR-778E ONLY
OR	405 029 4501	TR 2SD1858-R,VHR-778E ONLY
Q5105	405 099 8508	TR 2SC4640S
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 099 8607	TR 2SC4640T
OR	405 011 8500	TR 2SC1740S-R
Q5110	405 083 6305	TR DTB113ZK,EXCEPT VHR-778E

LOCATION	PARTS NO.	DESCRIPTION
Q5111	405 000 2007	TR DTA144EK,EXCEPT VHR-778E
Q5112	405 000 4100	TR DTC124EK,EXCEPT VHR-778E
Q5113	405 000 2908	TR DTC114EK,EXCEPT VHR-778E
Q5114	405 125 3200	TR 2SC5070,EXCEPT VHR-778E
Q5115	405 029 3504	TR DTC144EK,EXCEPT VHR-778E
Q5116	405 000 4100	TR DTC124EK,EXCEPT VHR-778E
Q5117	405 138 7905	TR DTC123JKA,EXCEPT VHR-778E
Q5131	405 125 3200	TR 2SC5070,EXCEPT VHR-778E
Q5131	405 089 2103	TR 2SC4483-S,VHR-778E ONLY
OR	405 089 2202	TR 2SC4483-T,VHR-778E ONLY
OR	405 104 3108	TR 2SD1858-Q,VHR-778E ONLY
OR	405 029 4501	TR 2SD1858-R,VHR-778E ONLY
Q5132	405 000 0409	TR DTA114EK,VHR-778E ONLY
Q5132	405 000 2007	TR DTA144EK,EXCEPT VHR-778E
Q5133	405 000 2908	TR DTC114EK
Q5134	405 099 8508	TR 2SC4640S,VHR-778E ONLY
OR	405 011 8401	TR 2SC1740S-Q,VHR-778E ONLY
OR	405 093 0607	TR KSC2785-Y,VHR-778E ONLY
OR	405 099 8607	TR 2SC4640T,VHR-778E ONLY
OR	405 011 8500	TR 2SC1740S-R,VHR-778E ONLY
Q5134	405 014 4509	TR 2SC2412K-R,EXCEPT VHR-778E
OR	405 014 4608	TR 2SC2412K-S,EXCEPT VHR-778E
	(INTEGRATED CIRCUITS)	
IC101	410 297 2500	IC LA71511DML-MPB
IC102	409 372 4508	IC LC89977M
IC141	410 301 7903	IC LC74788JM-9696
IC231	409 406 0100	IC BH7801BK
OR	409 392 2201	IC BH7801AK
IC301	410 309 1903	IC LC866852A-5G59,VHR-778E ONLY
IC301	410 311 3803	IC LC866852A-5G91,VHR-778G ONLY
IC301	410 311 4701	IC LC866852A-5G80,VHR-788G ONLY
IC302	409 314 2005	IC LB1643
IC303	409 415 0009	IC BMR03H-04
IC304	409 401 6305	IC BR24C02,VHR-778E ONLY
OR	410 177 3603	IC AT24C02-10PC,VHR-778E ONLY
OR	409 348 6901	IC XL24C04P,EXCEPT VHR-778E
OR	409 348 6802	IC XL24C02P,VHR-778E ONLY
OR	410 172 6807	IC X24C02PC7189,VHR-778E ONLY
OR	410 189 5701	IC 24LC02B/P,VHR-778E ONLY
IC304	410 189 5800	IC 24LC04B/P,EXCEPT VHR-778E
OR	410 177 3702	IC AT24C04-10PC,EXCEPT VHR-778E
OR	410 172 6906	IC X24C04PC7346,EXCEPT VHR-778E
IC341	409 026 8203	IC L5631,VHR-778E ONLY
OR	409 057 5103	IC UPC574J,VHR-778E ONLY
IC351	409 409 2507	IC BU2923K
IC501	409 409 3801	IC MA3810-4105,EXCEPT VHR-778E
IC511	409 180 2307	IC UPC1093J
	(DIODES)	
D1005	407 012 4406	DIODE 1SS133
D1301	407 012 4406	DIODE 1SS133
D1302	407 012 4406	DIODE 1SS133
D1341	407 012 4406	DIODE 1SS133
D1342	407 012 4406	DIODE 1SS133
D1347	407 012 4406	DIODE 1SS133
D1348	407 012 4406	DIODE 1SS133
D2301	407 012 4406	DIODE 1SS133
D2341	407 012 4406	DIODE 1SS133
D2371	407 099 7000	ZENER DIODE MTZJ15B
D2373	407 099 7000	ZENER DIODE MTZJ15B
D3001	407 012 4406	DIODE 1SS133
D3003	407 012 4406	DIODE 1SS133,EXCEPT VHR-778E
D3101	407 012 4406	DIODE 1SS133,EXCEPT VHR-778E
D3102	407 012 4406	DIODE 1SS133,VHR-788G ONLY
D3105	407 012 4406	DIODE 1SS133
D3106	407 012 4406	DIODE 1SS133
D3109	407 012 4406	DIODE 1SS133,VHR-778E ONLY
D3115	407 012 4406	DIODE 1SS133,EXCEPT VHR-788G
D3117	407 012 4406	DIODE 1SS133
D3120	407 012 4406	DIODE 1SS133
D3124	407 012 4406	DIODE 1SS133
D3201	407 012 4406	DIODE 1SS133,VHR-778E ONLY
D3202	407 012 4406	DIODE 1SS133,VHR-778E ONLY
D3401	407 100 0006	ZENER DIODE MTZJ33C,EXCEPT VHR-778E
D3502	407 012 4406	DIODE 1SS133
D3505	407 100 6602	DIODE 1SS291
D3506	407 100 6602	DIODE 1SS291
D3554	407 012 4406	DIODE 1SS133

LOCATION	PARTS NO.	DESCRIPTION
D5001	407 197 6509	DIODE DB155G-S
OR	407 104 5304	DIODE S1WB(A)60
D5002	407 004 9808	DIODE DSK10E,EXCEPT VHR-778E
D5003	407 078 2705	DIODE 1SS244,VHR-778E ONLY
D5004	407 078 2705	DIODE 1SS244,VHR-778E ONLY
D5006	407 078 2705	DIODE 1SS244,VHR-778E ONLY
D5010	407 091 6704	DIODE AP01C,VHR-778E ONLY
D5011	407 198 2401	DIODE SFT14,EXCEPT VHR-778E
D5012	407 198 2401	DIODE SFT14,EXCEPT VHR-778E
D5012	408 038 0908	ZENER DIODE 1.5KE150A,VHR-778E ONLY
D5013	⚠ 407 169 5608	PHOTO COUPLE PC123U2
D5014	407 078 2705	DIODE 1SS244,EXCEPT VHR-778E
D5015	407 078 2705	DIODE 1SS244,EXCEPT VHR-778E
D5016	407 125 9008	ZENER DIODE MTZJ2.0A,EXCEPT VHR-778E
D5019	407 078 2705	DIODE 1SS244,EXCEPT VHR-778E
D5101	408 038 5309	DIODE ERC81-004J11,EXCEPT VHR-778E
D5101	407 169 5707	DIODE RL2Z-LF-C4,VHR-778E ONLY
OR	407 198 2609	DIODE SF34,VHR-778E ONLY
OR	407 160 9308	DIODE ERB93-02L3,VHR-778E ONLY
D5102	407 198 2500	DIODE SF24,VHR-778E ONLY
D5102	407 205 7009	DIODE D2FS6,EXCEPT VHR-778E
OR	407 205 7009	DIODE D2FS6,EXCEPT VHR-778E
D5103	407 078 2705	DIODE 1SS244
D5104	407 078 2705	DIODE 1SS244,VHR-778E ONLY
D5104	407 198 2401	DIODE SFT14,EXCEPT VHR-778E
D5105	407 198 2401	DIODE SFT14,VHR-778E ONLY
D5105	407 167 8007	DIODE D1FL20U,EXCEPT VHR-778E
OR	407 167 8007	DIODE D1FL20U,EXCEPT VHR-778E
D5106	407 078 2705	DIODE 1SS244,EXCEPT VHR-778E
D5107	407 063 8903	ZENER DIODE MTZJ5.6C,VHR-778E ONLY
D5107	407 099 5303	ZENER DIODE MTZJ5.6B,EXCEPT VHR-778E
D5108	407 063 8903	ZENER DIODE MTZJ5.6C,VHR-778E ONLY
D5108	407 099 5303	ZENER DIODE MTZJ5.6B,EXCEPT VHR-778E
D5109	407 063 8903	ZENER DIODE MTZJ5.6C,VHR-778E ONLY
D5109	407 099 5303	ZENER DIODE MTZJ5.6B,EXCEPT VHR-778E
D5110	407 099 6508	ZENER DIODE MTZJ12A,EXCEPT VHR-778E
D5110	407 099 6607	ZENER DIODE MTZJ12B,VHR-778E ONLY
D5111	407 099 5501	ZENER DIODE MTZJ6.2C,VHR-778E ONLY
D5111	407 099 5600	ZENER DIODE MTZJ6.8A,EXCEPT VHR-778E
D5112	407 091 6902	DIODE ERA38-04,EXCEPT VHR-778E
D5112	407 004 9709	DIODE DSK10C,VHR-778E ONLY
OR	407 005 8701	DIODE ERA15-02,VHR-778E ONLY
D5113	407 004 9709	DIODE DSK10C,VHR-778E ONLY
OR	407 005 8701	DIODE ERA15-02,VHR-778E ONLY
D5115	407 078 2705	DIODE 1SS244,EXCEPT VHR-778E
D5116	407 055 4708	ZENER DIODE RD24MB1,EXCEPT VHR-778E
OR	407 055 4807	ZENER DIODE RD24M-B2,EXCEPT VHR-778E
OR	407 120 7108	ZENER DIODE RD24MB3,EXCEPT VHR-778E
	(CRYSTAL DEVICES)	
X1001	645 002 4436	OSC,CRYSTAL 4.433619MHZ
OR	645 014 8378	OSC,CRYSTAL 4.433619MHZ
OR	645 000 6012	OSC,CRYSTAL 4.433619MHZ
OR	645 000 6029	OSC,CRYSTAL 4.433619MHZ
X3001	645 008 8360	OSC,CERAMIC 8.500MHZ
OR	645 007 8460	OSC,CERAMIC 8.500MHZ
X3002	613 109 0972	OSC,CRYSTAL 32KHZ
OR	645 004 1938	OSC,CRYSTAL 32.768KHZ
	(VARIABLE RESISTORS)	
VR351	645 003 5166	VR,SEMI,220K N
OR	645 006 5538	VR,SEMI,220K N
OR	645 003 5593	VR,SEMI,220K N
	(INDUCTORS)	
L1002	645 001 4611	INDUCTOR,120U J
OR	645 003 7948	INDUCTOR,120U J
L1003	645 002 1510	INDUCTOR,68U J
OR	645 003 8228	INDUCTOR,68U J
L1006	645 001 4642	INDUCTOR,22U J
OR	645 003 8013	INDUCTOR,22U J
L1101	645 025 0644	INDUCTOR,0.75UH
L1102	645 025 0644	INDUCTOR,0.75UH
L1401	645 001 5472	INDUCTOR,33U J
OR	645 003 8105	INDUCTOR,33U J
L1402	645 001 4642	INDUCTOR,22U J
OR	645 003 8013	INDUCTOR,22U J
L1404	645 002 1442	INDUCTOR,18U J
OR	645 003 7986	INDUCTOR,18U J
L2021	645 003 6934	INDUCTOR,100U J

LOCATION	PARTS NO.	DESCRIPTION
L2021	645 003 7634	INDUCTOR,100U J
L2371	645 025 0644	INDUCTOR,0.75UH
L2372	645 025 0644	INDUCTOR,0.75UH
L2373	645 003 6934	INDUCTOR,100U J
OR	645 003 7634	INDUCTOR,100U J
L3001	645 025 0644	INDUCTOR,0.75UH
L3003	645 025 0644	INDUCTOR,0.75UH
L3301	645 001 4550	INDUCTOR,10U K
OR	645 003 7900	INDUCTOR,10U K
L3304	645 006 3886	INDUCTOR,1U K,EXCEPT VHR-778E
OR	645 005 3856	INDUCTOR,1U M,EXCEPT VHR-778E
L3305	645 001 5441	INDUCTOR,2.2U K,VHR-778E ONLY
OR	645 005 3887	INDUCTOR,2.2U M,VHR-778E ONLY
L5001	⚠ 645 013 5620	LINE FILTER
L5010	645 006 3602	INDUCTOR,1.1UH,VHR-778E ONLY
OR	645 024 3417	INDUCTOR,2.0UH,VHR-778E ONLY
L5011	645 009 3791	CORE,BEAD,VHR-778E ONLY
L5101	645 011 6957	INDUCTOR,10U,EXCEPT VHR-778E
L5101	645 006 3602	INDUCTOR,1.1UH,VHR-778E ONLY
OR	645 024 3417	INDUCTOR,2.0UH,VHR-778E ONLY
L5102	645 006 3602	INDUCTOR,1.1UH
OR	645 024 3417	INDUCTOR,2.0UH
L5109	645 009 3791	CORE,BEAD,VHR-778E ONLY
	(TRANSFORMERS)	
T2001	645 018 3515	TRANS,OSC,70KHZ
T5001	⚠ 645 020 8676	TRANS,POWER,PULSE,VHR-778E ONLY
T5001	⚠ 645 027 3599	TRANS,POWER,PULSE,EXCEPT VHR-778E
	(CAPACITORS)	
C1001	403 191 8709	ELECT 1U M 50V
C1002	403 189 2405	ELECT 10U M 16V
C1003	403 135 4002	ELECT 47U M 6.3V
C1004	403 068 0409	CERAMIC 0.1U Z 25V
C1005	403 163 7907	ELECT 47U M 6.3V
C1006	403 068 0409	CERAMIC 0.1U Z 25V
C1007	403 191 8709	ELECT 1U M 50V
C1009	403 191 8709	ELECT 1U M 50V
C1010	403 014 9302	CERAMIC 180P J 50V
C1011	403 023 4503	CERAMIC 330P J 50V
C1012	403 020 0508	CERAMIC 27P J 50V
C1013	403 150 6500	ELECT 22U M 16V
C1014	403 069 5601	CERAMIC 0.01U K 50V
C1015	403 022 8304	CERAMIC 33P J 50V
C1016	403 001 1906	CERAMIC 0.01U M 16V
C1017	403 001 1906	CERAMIC 0.01U M 16V
C1018	403 130 3109	CERAMIC 0.047U K 50V
C1019	403 191 8709	ELECT 1U M 50V
C1021	403 130 3109	CERAMIC 0.047U K 50V
C1022	403 109 6308	ELECT 1U M 50V
C1023	403 130 3109	CERAMIC 0.047U K 50V
C1024	403 192 5905	CERAMIC 0.1U K 25V
C1025	403 069 5601	CERAMIC 0.01U K 50V
C1026	403 191 8709	ELECT 1U M 50V
C1027	403 072 1607	CERAMIC 0.022U K 50V
C1028	403 191 8709	ELECT 1U M 50V
C1029	403 163 7907	ELECT 47U M 6.3V
C1030	403 068 0409	CERAMIC 0.1U Z 25V
C1031	403 069 5601	CERAMIC 0.01U K 50V
C1032	403 191 8709	ELECT 1U M 50V
C1033	403 014 3409	CERAMIC 18P J 50V
C1038	403 010 1102	CERAMIC 1000P J 50V
C1040	403 189 2405	ELECT 10U M 16V
C1041	403 020 0409	CERAMIC 27P J 50V
C1043	403 086 2805	NP-ELECT 1U M 50V
C1044	403 026 2803	CERAMIC 47P J 50V
C1046	403 111 8000	CERAMIC 1200P J 50V
C1047	403 026 2803	CERAMIC 47P J 50V
C1048	403 012 6907	CERAMIC 15P J 50V
C1050	403 012 6907	CERAMIC 15P J 50V
C1051	403 026 2803	CERAMIC 47P J 50V
C1052	403 026 2803	CERAMIC 47P J 50V
C1101	403 191 8709	ELECT 1U M 50V
C1102	403 163 7907	ELECT 47U M 6.3V
C1103	403 068 0409	CERAMIC 0.1U Z 25V
C1104	403 069 5601	CERAMIC 0.01U K 50V
C1105	403 069 5601	CERAMIC 0.01U K 50V
C1106	403 069 5601	CERAMIC 0.01U K 50V
C1107	403 069 5601	CERAMIC 0.01U K 50V
C1108	403 192 5905	CERAMIC 0.1U K 25V
C1109	403 068 0409	CERAMIC 0.1U Z 25V
C1301	403 135 4101	ELECT 470U M 6.3V
C1303	403 068 0409	CERAMIC 0.1U Z 25V
C1352	403 191 8709	ELECT 1U M 50V
C1353	403 109 6308	ELECT 1U M 50V
C1401	403 022 8205	CERAMIC 33P J 50V
C1403	403 109 6308	ELECT 1U M 50V
C1404	403 069 9500	CERAMIC 0.01U Z 50V
C1405	403 135 4002	ELECT 47U M 6.3V
C1406	403 018 0503	CERAMIC 22P J 50V
C1407	403 018 0503	CERAMIC 22P J 50V
C1410	403 009 5807	CERAMIC 100P J 50V
C1411	403 070 5508	CERAMIC 1200P K 50V
C1412	403 109 6308	ELECT 1U M 50V
C1414	403 014 3508	CERAMIC 18P J 50V
C1419	403 069 9500	CERAMIC 0.01U Z 50V
C2001	403 191 8709	ELECT 1U M 50V
C2002	403 069 1702	CERAMIC 1000P K 50V
C2003	403 069 5601	CERAMIC 0.01U K 50V
C2004	403 189 2405	ELECT 10U M 16V
C2005	403 167 7002	ELECT 4.7U M 50V
C2006	403 068 0409	CERAMIC 0.1U Z 25V
C2007	403 167 7002	ELECT 4.7U M 50V
C2008	403 068 0409	CERAMIC 0.1U Z 25V
C2009	403 159 8109	ELECT 100U M 6.3V
C2010	403 167 6500	ELECT 33U M 6.3V
C2011	403 167 6500	ELECT 33U M 6.3V
C2012	403 068 0409	CERAMIC 0.1U Z 25V
C2013	403 189 2405	ELECT 10U M 16V
C2016	403 163 8409	ELECT 47U M 16V
C2017	403 074 7607	CERAMIC 5600P K 50V
C2018	403 069 5601	CERAMIC 0.01U K 50V
C2021	403 069 1702	CERAMIC 1000P K 50V
C2022	403 069 1702	CERAMIC 1000P K 50V
C2023	403 075 0706	CERAMIC 6800P K 50V
C2024	403 075 0706	CERAMIC 6800P K 50V
C2025	403 193 7809	ELECT 100U M 16V
C2026	403 081 3302	POLYPRO 0.022U J 100V
C2027	403 068 0409	CERAMIC 0.1U Z 25V
C2051	403 018 0602	CERAMIC 22P J 50V
C2301	403 189 2405	ELECT 10U M 16V
C2302	403 189 2405	ELECT 10U M 16V
C2303	403 072 1607	CERAMIC 0.022U K 50V
C2304	403 072 1607	CERAMIC 0.022U K 50V
C2305	403 073 9107	CERAMIC 4700P K 50V
C2306	403 073 9107	CERAMIC 4700P K 50V
C2307	403 193 7809	ELECT 100U M 16V
C2308	403 193 7809	ELECT 100U M 16V
C2309	403 070 8806	CERAMIC 1500P K 50V
C2310	403 070 8806	CERAMIC 1500P K 50V
C2311	403 139 1502	ELECT 10U M 16V,EXCEPT VHR-788G
C2312	403 139 1502	ELECT 10U M 16V,EXCEPT VHR-788G
C2321	403 167 7002	ELECT 4.7U M 50V
C2323	403 193 7809	ELECT 100U M 16V
C2324	403 163 8409	ELECT 47U M 16V
C2325	403 072 1607	CERAMIC 0.022U K 50V
C2326	403 001 1906	CERAMIC 0.01U M 16V
C2327	403 139 1809	ELECT 47U M 16V
C2332	403 193 7809	ELECT 100U M 16V
C2361	403 069 0309	CERAMIC 1000P J 50V
C2362	403 069 0309	CERAMIC 1000P J 50V
C2363	403 069 1702	CERAMIC 1000P K 50V
C2364	403 069 1702	CERAMIC 1000P K 50V
C2365	403 018 7502	CERAMIC 220P J 50V
C2366	403 018 7502	CERAMIC 220P J 50V
C2369	403 018 7502	CERAMIC 220P J 50V
C2370	403 018 7502	CERAMIC 220P J 50V
C2372	403 071 8102	CERAMIC 2200P K 50V
C3001	403 018 0503	CERAMIC 22P J 50V
C3002	403 012 5900	CERAMIC 15P J 50V
C3004	403 069 5601	CERAMIC 0.01U K 50V
C3005	403 069 5601	CERAMIC 0.01U K 50V
C3008	403 150 6500	ELECT 22U M 16V
C3009	403 069 5601	CERAMIC 0.01U K 50V
C3011	403 068 0409	CERAMIC 0.1U Z 25V
C3012	403 069 5601	CERAMIC 0.01U K 50V

LOCATION	PARTS NO.	DESCRIPTION
C3014	403 135 4101	ELECT 470U M 6.3V
C3016	403 069 5601	CERAMIC 0.01U K 50V
C3017	403 069 1702	CERAMIC 1000P K 50V,VHR-778E ONLY
C3019	403 068 0409	CERAMIC 0.1U Z 25V
C3022	403 333 1001	DL-ELECT 0.1F Z 5.5V
C3034	403 069 5601	CERAMIC 0.01U K 50V
C3037	403 028 3402	CERAMIC 56P J 50V,EXCEPT VHR-778E
C3037	403 075 3103	CERAMIC 82P J 50V,VHR-778E ONLY
C3040	403 009 5807	CERAMIC 100P J 50V,EXCEPT VHR-778E
C3041	403 009 5807	CERAMIC 100P J 50V,EXCEPT VHR-778E
C3042	403 009 5807	CERAMIC 100P J 50V,EXCEPT VHR-778E
C3043	403 009 5807	CERAMIC 100P J 50V,EXCEPT VHR-778E
C3201	403 189 2405	ELECT 10U M 16V,VHR-778E ONLY
C3202	403 069 1702	CERAMIC 1000P K 50V,VHR-778E ONLY
C3203	403 189 2405	ELECT 10U M 16V,VHR-778E ONLY
C3204	403 069 1702	CERAMIC 1000P K 50V,VHR-778E ONLY
C3301	403 107 9905	ELECT 10U M 16V
C3302	403 107 9905	ELECT 10U M 16V,EXCEPT VHR-778E
C3302	403 134 8100	ELECT 100U M 6.3V,VHR-778E ONLY
C3303	403 024 7206	CERAMIC 390P J 50V,EXCEPT VHR-778E
C3307	403 068 0409	CERAMIC 0.1U Z 25V
C3314	403 189 2405	ELECT 10U M 16V
C3315	403 068 3608	CERAMIC 0.033U Z 25V,VHR-778E ONLY
C3316	403 167 7002	ELECT 4.7U M 50V,VHR-778E ONLY
C3318	403 011 5000	CERAMIC 120P J 50V
C3320	403 030 7009	CERAMIC 68P J 50V
C3324	403 121 9509	CERAMIC 0.1U Z 50V
C3325	403 068 0409	CERAMIC 0.1U Z 25V
C3401	403 014 9203	CERAMIC 180P J 50V,VHR-778E ONLY
C3402	403 168 6202	MT-POLYEST 0.33U J 50V,VHR-778E ONLY
C3403	403 184 9805	MT-POLYEST 0.22U J 50V,VHR-778E ONLY
C3404	403 193 8905	ELECT 22U M 50V
C3406	403 168 6103	MT-POLYEST 0.1U J 50V,VHR-778E ONLY
C3501	403 070 9803	CERAMIC 0.015U K 50V
C3502	403 075 0706	CERAMIC 6800P K 50V
C3503	403 070 9803	CERAMIC 0.015U K 50V
C3504	403 228 8207	ELECT 22U M 16V
C3505	403 228 8207	ELECT 22U M 16V
C3506	403 075 0706	CERAMIC 6800P K 50V
C3507	403 150 6500	ELECT 22U M 16V
C3508	403 150 6500	ELECT 22U M 16V
C3509	403 163 7907	ELECT 47U M 6.3V
C3511	403 071 6504	CERAMIC 220P K 50V
C3512	403 056 9704	POLYESTER 0.01U J 50V
C3513	403 119 6701	CERAMIC 0.068U K 16V
C3514	403 184 9805	MT-POLYEST 0.22U J 50V
C3515	403 063 0206	POLYESTER 6800P K 50V
C3516	403 071 8102	CERAMIC 2200P K 50V
C3517	403 070 8806	CERAMIC 1500P K 50V
C3522	403 069 1207	CERAMIC 1000P K 50V
C3523	403 139 2707	ELECT 1U M 50V
C3524	403 069 5601	CERAMIC 0.01U K 50V
C3525	403 139 2608	ELECT 0.47U M 50V
C3526	403 063 7205	POLYESTER 0.082U J 50V
C3536	403 193 7601	ELECT 220U M 6.3V
C3540	403 009 5708	CERAMIC 100P J 50V
C3551	403 175 0903	MT-POLYEST 0.12U J 50V
C3552	403 014 9203	CERAMIC 180P J 50V
C3553	403 191 8709	ELECT 1U M 50V
C3554	403 013 3004	CERAMIC 150P J 50V
C3555	403 069 5601	CERAMIC 0.01U K 50V
C3556	403 069 1702	CERAMIC 1000P K 50V
C3557	403 191 8709	ELECT 1U M 50V
C3558	403 167 6500	ELECT 33U M 6.3V
C3561	403 058 9306	POLYESTER 0.018U J 50V
C3562	403 138 5600	POLYESTER 5600P J 50V
C3570	403 070 2606	CERAMIC 0.1U Z 50V
C3571	403 070 2606	CERAMIC 0.1U Z 50V
C3581	403 184 9300	MT-POLYEST 0.047U J 50V
C5001	⚠ 404 070 4201	MT-POLYEST 0.068U M 250V
C5002	⚠ 404 070 4201	MT-POLYEST 0.068U M 250V
C5005	⚠ 404 074 1602	CERAMIC 1000P M 250V, EXCEPT VHR-778E
C5005	⚠ 404 074 2104	CERAMIC 1000P M 250V,VHR-778E ONLY
C5007	⚠ 404 074 1602	CERAMIC 1000P M 250V, EXCEPT VHR-778E
C5007	⚠ 404 074 2104	CERAMIC 1000P M 250V,VHR-778E ONLY
C5010	403 249 0204	ELECT 47U M 400V
C5011	403 301 1101	ELECT 4.7U M 50V,VHR-778E ONLY
C5012	403 076 2402	CERAMIC 3300P K 500V,VHR-778E ONLY
C5012	403 247 3702	CERAMIC 3300P K 1K,EXCEPT VHR-778E
C5013	403 222 1303	CERAMIC 1000P K 1KV, EXCEPT VHR-778E
C5013	403 255 8409	CERAMIC 39P J 1K,VHR-778E ONLY
C5014	403 192 5905	CERAMIC 0.1U K 25V,EXCEPT VHR-778E
C5015	403 069 5601	CERAMIC 0.01U K 50V, EXCEPT VHR-778E
C5015	403 192 5905	CERAMIC 0.1U K 25V,VHR-778E ONLY
C5016	403 192 5905	CERAMIC 0.1U K 25V,EXCEPT VHR-778E
C5017	403 024 7107	CERAMIC 390P J 50V,VHR-778E ONLY
C5020	403 255 8508	CERAMIC 47P J 1K,VHR-778E ONLY
C5021	403 076 0507	CERAMIC 2200P K 500V,VHR-778E ONLY
C5101	403 314 0207	ELECT 1000U M 16V
C5102	403 147 9200	ELECT 1000U M 6.3V,EXCEPT VHR-778E
C5102	403 135 3302	ELECT 1000U M 6.3V,VHR-778E ONLY
C5103	403 314 0108	ELECT 470U M 16V
C5104	403 125 5507	ELECT 1000U M 16V
C5105	403 304 9302	ELECT 47U M 50V
C5106	403 301 1309	ELECT 47U M 35V
C5107	403 301 1507	ELECT 220U M 6.3V
C5108	403 301 1101	ELECT 4.7U M 50V,EXCEPT VHR-778E
C5111	403 125 5606	ELECT 100U M 16V
C5112	403 189 2405	ELECT 10U M 16V
C5113	403 189 2405	ELECT 10U M 16V
C5114	403 107 9905	ELECT 10U M 16V
C5115	403 135 7805	ELECT 3.3U M 50V
C5116	403 107 9905	ELECT 10U M 16V
C5117	403 135 7805	ELECT 3.3U M 50V
C5118	403 189 2405	ELECT 10U M 16V
C5119	403 192 5905	CERAMIC 0.1U K 25V,EXCEPT VHR-778E
C5120	403 192 5905	CERAMIC 0.1U K 25V,EXCEPT VHR-778E
C5122	403 192 5905	CERAMIC 0.1U K 25V,EXCEPT VHR-778E
C5123	403 192 5905	CERAMIC 0.1U K 25V,EXCEPT VHR-778E
C5123	403 075 6906	CERAMIC 100P K 500V,VHR-778E ONLY
C5124	403 108 0000	ELECT 0.22U M 50V,VHR-778E ONLY
C5135	403 057 3107	POLYESTER 0.1U K 50V,VHR-778E ONLY
C5135	403 068 0409	CERAMIC 0.1U Z 25V,EXCEPT VHR-778E
	(RESISTORS)	
R1001	401 037 5400	MT-GLAZE 1K JA 1/10W
R1002	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R1003	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R1004	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R1005	401 038 6307	MT-GLAZE 470 JA 1/10W
R1006	401 038 6307	MT-GLAZE 470 JA 1/10W
R1011	401 037 5400	MT-GLAZE 1K JA 1/10W
R1012	401 038 6505	MT-GLAZE 47K JA 1/10W
R1014	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R1015	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R1016	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R1017	401 016 4707	CARBON 22K JA 1/4W
R1024	401 037 5400	MT-GLAZE 1K JA 1/10W
R1025	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1028	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1032	401 037 5400	MT-GLAZE 1K JA 1/10W
R1033	401 018 2701	CARBON 330 JA 1/4W
R1034	401 038 5003	MT-GLAZE 390 JA 1/10W
R1041	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1042	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1045	401 038 1005	MT-GLAZE 2.2M JA 1/10W
R1046	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1047	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1048	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1049	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1051	401 012 4404	CARBON 100 JA 1/4W
R1101	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1102	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1104	401 015 2605	CARBON 1.8K JA 1/4W
R1301	401 019 0904	CARBON 390 JA 1/4W
R1303	401 022 6702	CARBON 75 JA 1/4W
R1304	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1312	401 038 0602	MT-GLAZE 220 JA 1/10W
R1313	401 038 2002	MT-GLAZE 270 JA 1/10W
R1352	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1404	401 038 3603	MT-GLAZE 3.3K JA 1/10W

LOCATION	PARTS NO.	DESCRIPTION
R1405	401 038 0602	MT-GLAZE 220 JA 1/10W
R1410	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1417	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R1419	401 037 5806	MT-GLAZE 1M JA 1/10W
R2001	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R2002	401 037 6803	MT-GLAZE 12K JA 1/10W
R2003	401 037 6803	MT-GLAZE 12K JA 1/10W
R2004	401 038 3801	MT-GLAZE 330K JA 1/10W
R2005	401 037 8500	MT-GLAZE 160 JA 1/10W
R2006	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R2007	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R2008	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R2009	401 038 3900	MT-GLAZE 3.3M JA 1/10W
R2010	401 038 3702	MT-GLAZE 33K JA 1/10W
R2011	401 037 5608	MT-GLAZE 10K JA 1/10W
R2017	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R2021	401 038 2200	MT-GLAZE 27K JA 1/10W
R2022	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R2023	401 037 5400	MT-GLAZE 1K JA 1/10W
R2024	401 038 6208	MT-GLAZE 47 JA 1/10W
R2025	401 011 8809	CARBON 1 JA 1/4W
R2026	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R2027	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R2028	401 037 9101	MT-GLAZE 180 JA 1/10W
R2029	401 037 5608	MT-GLAZE 10K JA 1/10W
R2030	401 038 0800	MT-GLAZE 22K JA 1/10W
R2031	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R2301	401 020 1907	CARBON 4.7K JA 1/4W
R2302	401 020 1907	CARBON 4.7K JA 1/4W
R2303	401 038 2101	MT-GLAZE 2.7K JA 1/10W,VHR-778E ONLY
R2303	401 038 2200	MT-GLAZE 27K JA 1/10W, EXCEPT VHR-778E
R2304	401 038 2101	MT-GLAZE 2.7K JA 1/10W,VHR-778E ONLY
R2304	401 038 2200	MT-GLAZE 27K JA 1/10W, EXCEPT VHR-778E
R2305	401 038 3702	MT-GLAZE 33K JA 1/10W, EXCEPT VHR-778E
R2305	401 039 0403	MT-GLAZE 8.2K JA 1/10W,VHR-778E ONLY
R2306	401 038 3702	MT-GLAZE 33K JA 1/10W, EXCEPT VHR-778E
R2306	401 039 0403	MT-GLAZE 8.2K JA 1/10W,VHR-778E ONLY
R2313	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R2314	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R2315	401 020 1907	CARBON 4.7K JA 1/4W
R2316	401 020 1907	CARBON 4.7K JA 1/4W
R2317	401 038 0909	MT-GLAZE 220K JA 1/10W
R2318	401 038 0909	MT-GLAZE 220K JA 1/10W
R2322	401 023 2703	CARBON 8.2K JA 1/4W
R2323	401 038 2200	MT-GLAZE 27K JA 1/10W
R2324	401 038 2200	MT-GLAZE 27K JA 1/10W
R2325	401 014 4006	CARBON 1.5K JA 1/4W
R2327	401 016 3700	CARBON 2.2K JA 1/4W
R2329	401 038 1005	MT-GLAZE 2.2M JA 1/10W
R2331	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R2332	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R2333	401 038 2200	MT-GLAZE 27K JA 1/10W,VHR-778E ONLY
R2334	401 038 3702	MT-GLAZE 33K JA 1/10W,VHR-778E ONLY
R2335	401 037 5400	MT-GLAZE 1K JA 1/10W
R2336	401 014 4006	CARBON 1.5K JA 1/4W
R2337	401 014 4006	CARBON 1.5K JA 1/4W
R2340	401 018 2701	CARBON 330 JA 1/4W
R2341	401 021 2903	CARBON 5.6K JA 1/4W
R2342	401 021 2903	CARBON 5.6K JA 1/4W
R2343	401 012 4404	CARBON 100 JA 1/4W
R2344	401 012 6903	CARBON 10K JA 1/4W
R2345	401 012 6903	CARBON 10K JA 1/4W
R2347	401 020 1907	CARBON 4.7K JA 1/4W
R2361	401 012 5609	CARBON 1K JA 1/4W
R2362	401 012 5609	CARBON 1K JA 1/4W
R2363	401 038 9001	MT-GLAZE 680 JA 1/10W
R2364	401 038 9001	MT-GLAZE 680 JA 1/10W
R2365	401 037 5400	MT-GLAZE 1K JA 1/10W
R2366	401 037 5400	MT-GLAZE 1K JA 1/10W
R2369	401 037 5400	MT-GLAZE 1K JA 1/10W
R2370	401 037 5400	MT-GLAZE 1K JA 1/10W
R2379	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R2380	401 038 9209	MT-GLAZE 6.8K JA 1/10W

LOCATION	PARTS NO.	DESCRIPTION
R2381	401 037 5400	MT-GLAZE 1K JA 1/10W
R2392	401 038 9506	MT-GLAZE 75 JA 1/10W
R2396	401 038 9506	MT-GLAZE 75 JA 1/10W
R2399	401 038 0701	MT-GLAZE 2.2K JA 1/10W,VHR-788G ONLY
R3001	⚠402 067 7402	FUSIBLE RES 3.3 JA 1/2W
R3004	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R3007	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R3008	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R3009	401 023 1607	CARBON 820 JA 1/4W
R3011	401 016 4707	CARBON 22K JA 1/4W,VHR-778E ONLY
R3011	401 020 2805	CARBON 47K JA 1/4W, EXCEPT VHR-778E
R3013	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R3014	401 014 9001	CARBON 16K JA 1/4W
R3015	401 014 9001	CARBON 16K JA 1/4W
R3017	401 038 9209	MT-GLAZE 6.8K JA 1/10W,EXCEPT VHR-778E
R3018	401 038 9209	MT-GLAZE 6.8K JA 1/10W,VHR-778E ONLY
R3019	401 037 9309	MT-GLAZE 18K JA 1/10W,VHR-778E ONLY
R3019	401 038 2200	MT-GLAZE 27K JA 1/10W, EXCEPT VHR-778E
R3023	401 037 5400	MT-GLAZE 1K JA 1/10W
R3024	401 037 5400	MT-GLAZE 1K JA 1/10W
R3025	401 037 5400	MT-GLAZE 1K JA 1/10W
R3026	401 037 5400	MT-GLAZE 1K JA 1/10W
R3032	401 018 4804	CARBON 33K JA 1/4W
R3036	401 016 3700	CARBON 2.2K JA 1/4W
R3037	401 038 2200	MT-GLAZE 27K JA 1/10W,VHR-778E ONLY
R3037	401 038 5300	MT-GLAZE 39K JA 1/10W, EXCEPT VHR-778E
R3047	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R3048	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R3049	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R3050	401 016 4707	CARBON 22K JA 1/4W
R3051	401 016 4707	CARBON 22K JA 1/4W
R3056	401 038 6505	MT-GLAZE 47K JA 1/10W,VHR-778E ONLY
R3057	401 016 3700	CARBON 2.2K JA 1/4W
R3058	401 016 3700	CARBON 2.2K JA 1/4W
R3101	401 012 6903	CARBON 10K JA 1/4W
R3102	401 012 6903	CARBON 10K JA 1/4W
R3103	401 012 6903	CARBON 10K JA 1/4W
R3104	401 012 6903	CARBON 10K JA 1/4W
R3201	401 020 2805	CARBON 47K JA 1/4W,VHR-778E ONLY
R3202	401 038 3702	MT-GLAZE 33K JA 1/10W,VHR-778E ONLY
R3203	401 037 8203	MT-GLAZE 1.5M JA 1/10W,VHR-778E ONLY
R3204	401 038 0800	MT-GLAZE 22K JA 1/10W,VHR-778E ONLY
R3205	401 038 6505	MT-GLAZE 47K JA 1/10W,VHR-778E ONLY
R3206	401 038 3702	MT-GLAZE 33K JA 1/10W,VHR-778E ONLY
R3207	401 037 8203	MT-GLAZE 1.5M JA 1/10W,VHR-778E ONLY
R3301	401 038 5003	MT-GLAZE 390 JA 1/10W
R3302	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R3305	401 038 3603	MT-GLAZE 3.3K JA 1/10W,VHR-778E ONLY
R3306	401 039 0403	MT-GLAZE 8.2K JA 1/10W,VHR-778E ONLY
R3309	⚠402 078 2908	FUSIBLE RES 680 GA 1/4W
R3401	401 038 3702	MT-GLAZE 33K JA 1/10W,VHR-778E ONLY
R3402	401 037 5608	MT-GLAZE 10K JA 1/10W,VHR-778E ONLY
R3403	401 037 6605	MT-GLAZE 120 JA 1/10W,VHR-778E ONLY
R3404	401 012 6903	CARBON 10K JA 1/4W,VHR-778E ONLY
R3405	401 037 9309	MT-GLAZE 18K JA 1/10W,VHR-778E ONLY
R3406	401 037 8005	MT-GLAZE 15K JA 1/10W,VHR-778E ONLY
R3407	401 037 6803	MT-GLAZE 12K JA 1/10W,VHR-778E ONLY
R3501	401 012 8006	CARBON 100K JA 1/4W
R3502	401 037 5707	MT-GLAZE 100K JA 1/10W
R3503	401 038 3801	MT-GLAZE 330K JA 1/10W
R3504	401 014 6000	CARBON 150K JA 1/4W
R3505	401 014 5102	CARBON 15K JA 1/4W
R3506	401 038 0909	MT-GLAZE 220K JA 1/10W
R3507	401 014 6000	CARBON 150K JA 1/4W
R3508	401 017 2702	CARBON 27K JA 1/4W
R3516	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R3517	401 038 6505	MT-GLAZE 47K JA 1/10W
R3518	401 020 2805	CARBON 47K JA 1/4W
R3519	401 038 3801	MT-GLAZE 330K JA 1/10W
R3520	401 038 5409	MT-GLAZE 390K JA 1/10W
R3521	401 037 5608	MT-GLAZE 10K JA 1/10W
R3525	401 012 5609	CARBON 1K JA 1/4W
R3526	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R3527	401 037 5400	MT-GLAZE 1K JA 1/10W

LOCATION	PARTS NO.	DESCRIPTION
R3528	401 020 7800	CARBON 510 JA 1/4W
R3529	401 020 7800	CARBON 510 JA 1/4W
R3537	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R3546	401 020 1907	CARBON 4.7K JA 1/4W
R3547	401 037 8005	MT-GLAZE 15K JA 1/10W
R3549	401 037 5608	MT-GLAZE 10K JA 1/10W
R3550	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R3551	401 037 5608	MT-GLAZE 10K JA 1/10W
R3552	401 037 5707	MT-GLAZE 100K JA 1/10W
R3553	401 016 5704	CARBON 220K JA 1/4W
R3555	401 037 5707	MT-GLAZE 100K JA 1/10W
R3556	401 037 5608	MT-GLAZE 10K JA 1/10W
R3557	401 037 9408	MT-GLAZE 180K JA 1/10W
R3558	401 038 6307	MT-GLAZE 470 JA 1/10W
R3560	401 037 5400	MT-GLAZE 1K JA 1/10W
R3581	401 013 7206	CARBON 120K JA 1/4W
R5001	402 013 9108	SOLID 2.7M KB 1/2W
R5002	401 037 9101	MT-GLAZE 180 JA 1/10W,VHR-778E ONLY
R5002	401 021 4907	CARBON 560K JA 1/4W, EXCEPT VHR-778E
R5003	401 037 9200	MT-GLAZE 1.8K JA 1/10W,VHR-778E ONLY
R5003	401 021 4907	CARBON 560K JA 1/4W, EXCEPT VHR-778E
R5004	401 038 3801	MT-GLAZE 330K JA 1/10W,VHR-778E ONLY
R5005	401 037 5004	MT-GLAZE 0.000 ZA 1/10W,VHR-778E ONLY
R5006	401 037 5608	MT-GLAZE 10K JA 1/10W,VHR-778E ONLY
R5007	401 038 0800	MT-GLAZE 22K JA 1/10W,VHR-778E ONLY
R5009	401 038 9308	MT-GLAZE 68K JA 1/10W,VHR-778E ONLY
R5010	401 019 3905	CARBON 390K JA 1/4W,VHR-778E ONLY
R5010	401 060 9901	OXIDE-MT 3.3 JA 1W,EXCEPT VHR-778E
R5011	401 019 3905	CARBON 390K JA 1/4W,VHR-778E ONLY
R5011	401 015 0403	CARBON 18 JA 1/4W,EXCEPT VHR-778E
R5012	401 064 7309	OXIDE-MT 100 JA 2W,EXCEPT VHR-778E
R5013	401 037 5400	MT-GLAZE 1K JA 1/10W,EXCEPT VHR-778E
R5014	401 037 5400	MT-GLAZE 1K JA 1/10W,EXCEPT VHR-778E
R5015	401 037 6704	MT-GLAZE 1.2K JA 1/10W,EXCEPT VHR-778E
R5016	401 038 9001	MT-GLAZE 680 JA 1/10W, EXCEPT VHR-778E
R5017	401 038 2101	MT-GLAZE 2.7K JA 1/10W,EXCEPT VHR-778E
R5101	401 038 5003	MT-GLAZE 390 JA 1/10W, EXCEPT VHR-778E
R5101	401 018 2701	CARBON 330 JA 1/4W,VHR-778E ONLY
R5102	401 038 5003	MT-GLAZE 390 JA 1/10W,VHR-778E ONLY
R5102	401 037 7800	MT-GLAZE 150 JA 1/10W, EXCEPT VHR-778E
R5103	401 038 7601	MT-GLAZE 560 JA 1/10W, EXCEPT VHR-778E
R5103	401 021 1807	CARBON 560 JA 1/4W,VHR-778E ONLY
R5104	401 018 3708	CARBON 3.3K JA 1/4W,VHR-778E ONLY
R5104	401 012 6903	CARBON 10K JA 1/4W, EXCEPT VHR-778E
R5105	401 016 2505	CARBON 220 JA 1/4W
R5106	401 020 0702	CARBON 470 JA 1/4W
R5108	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R5109	401 018 3708	CARBON 3.3K JA 1/4W,VHR-778E ONLY
R5109	401 038 3603	MT-GLAZE 3.3K JA 1/10W,EXCEPT VHR-778E
R5110	⚠ 402 071 3100	FUSIBLE RES 27 JA 1/4W,EXCEPT VHR-778E
R5110	⚠ 402 071 3100	FUSIBLE RES 27 JA 1/4W,VHR-778E ONLY
R5111	401 038 7601	MT-GLAZE 560 JA 1/10W, EXCEPT VHR-778E
R5111	401 020 7800	CARBON 510 JA 1/4W,VHR-778E ONLY
R5112	401 038 5102	MT-GLAZE 3.9K JA 1/10W,VHR-778E ONLY
R5114	401 038 6208	MT-GLAZE 47 JA 1/10W,VHR-778E ONLY
R5115	401 038 2101	MT-GLAZE 2.7K JA 1/10W,EXCEPT VHR-778E
R5116	401 038 2101	MT-GLAZE 2.7K JA 1/10W,EXCEPT VHR-778E
R5117	401 037 6605	MT-GLAZE 120 JA 1/10W, EXCEPT VHR-778E
R5118	401 037 6605	MT-GLAZE 120 JA 1/10W, EXCEPT VHR-778E
R5119	401 038 6505	MT-GLAZE 47K JA 1/10W, EXCEPT VHR-778E
R5120	⚠ 402 004 0107	FUSIBLE RES 10 JA 1/4W,EXCEPT VHR-778E
R5120	⚠ 402 004 2705	FUSIBLE RES 8.2 JA 1/4W,VHR-778E ONLY
R5121	401 015 7709	CARBON 2.7 JA 1/4W,VHR-778E ONLY
R5121	401 017 7509	CARBON 3.9 JA 1/4W,EXCEPT VHR-778E
R5122	401 037 5004	MT-GLAZE 0.000 ZA 1/10W,EXCEPT VHR-778E
R5123	401 039 0304	MT-GLAZE 820 JA 1/10W, EXCEPT VHR-778E
R5123	401 015 2605	CARBON 1.8K JA 1/4W,VHR-778E ONLY
R5124	401 037 5004	MT-GLAZE 0.000 ZA 1/10W,EXCEPT VHR-778E
R5125	401 037 5004	MT-GLAZE 0.000 ZA 1/10W,EXCEPT VHR-778E
R5131	401 014 4006	CARBON 1.5K JA 1/4W, EXCEPT VHR-778E
R5132	401 018 3708	CARBON 3.3K JA 1/4W,VHR-778E ONLY
R5132	401 038 4105	MT-GLAZE 3.6K JA 1/10W,EXCEPT VHR-778E
R5133	401 023 2703	CARBON 8.2K JA 1/4W,VHR-778E ONLY
R5133	401 039 0403	MT-GLAZE 8.2K JA 1/10W,EXCEPT VHR-778E
R5134	401 014 4006	CARBON 1.5K JA 1/4W, EXCEPT VHR-778E
R5134	401 018 3708	CARBON 3.3K JA 1/4W,VHR-778E ONLY
R5135	401 037 6605	MT-GLAZE 120 JA 1/10W
	(JUMPERS)	
	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
	(FUSES)	
F5001	⚠ 423 025 9900	FUSE 250V 2.5A
OR	⚠ 423 022 6506	FUSE 250V 2.5A
OR	⚠ 423 021 8402	FUSE 250V 2.5A
	(PROTECTORS)	
PR510	⚠ 645 005 9834	PROTECTOR,IC 1.0A 50V,EXCEPT VHR-778E
PR511	⚠ 645 005 9834	PROTECTOR,IC 1.0A 50V,EXCEPT VHR-778E
PR511	⚠ 645 005 9858	PROTECTOR,IC 0.8A 50V,VHR-778E ONLY
PR512	⚠ 645 014 2529	PROTECTOR,1.25A 125V
	(JACKS)	
JK231	645 012 4068	JACK,RCA (N.S.P)
JK232	645 012 4051	JACK,RCA (N.S.P)
	(MISCELLANEOUS)	
	645 008 8070	FIXER,VHR-788G ONLY
	613 053 8048	FIXER
	645 008 7677	HOLDER,FUSE
OR	645 008 7660	HOLDER,FUSE
OR	645 016 0479	HOLDER,FUSE

COMPL PWB,VP-1

	613 178 7841	VHR-778E ONLY
	613 179 0124	EXCEPT VHR-778E
	(CONNECTORS)	
CN182	645 005 4204	SOCKET,12P (N.S.P)
OR	645 009 4163	SOCKET,FFC 12P (N.S.P)
	(INTEGRATED CIRCUITS)	
IC181	409 391 5302	IC LA70011L
IC291	409 326 0808	IC LA7256
	(INDUCTORS)	
L2901	645 003 7627	INDUCTOR,10U J
OR	645 003 6910	INDUCTOR,10U J
	(CAPACITORS)	
C1802	403 073 9107	CERAMIC 4700P K 50V
C1805	403 068 0409	CERAMIC 0.1U Z 25V
C1806	403 069 5601	CERAMIC 0.01U K 50V
C1807	403 163 7907	ELECT 47U M 6.3V
C1808	403 068 0409	CERAMIC 0.1U Z 25V
C1809	403 191 8709	ELECT 1U M 50V
C1810	403 069 5601	CERAMIC 0.01U K 50V
C1811	403 069 5601	CERAMIC 0.01U K 50V
C1835	403 069 5601	CERAMIC 0.01U K 50V
C1836	403 072 1607	CERAMIC 0.022U K 50V
C2901	403 193 7601	ELECT 220U M 6.3V
C2902	403 068 0409	CERAMIC 0.1U Z 25V
C2903	403 068 0409	CERAMIC 0.1U Z 25V
C2904	403 068 0409	CERAMIC 0.1U Z 25V
C2905	403 068 0409	CERAMIC 0.1U Z 25V
C2906	403 068 0409	CERAMIC 0.1U Z 25V
C2907	403 068 0409	CERAMIC 0.1U Z 25V
C2908	403 068 0409	CERAMIC 0.1U Z 25V
C2910	403 068 0409	CERAMIC 0.1U Z 25V
C2911	403 068 0409	CERAMIC 0.1U Z 25V
	(RESISTORS)	
R1801	401 038 0800	MT-GLAZE 22K JA 1/10W
R1802	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R1803	401 037 9309	MT-GLAZE 18K JA 1/10W
R1804	401 038 9001	MT-GLAZE 680 JA 1/10W
R1805	401 038 9001	MT-GLAZE 680 JA 1/10W
R1806	401 038 6406	MT-GLAZE 4.7K JA 1/10W

LOCATION	PARTS NO.	DESCRIPTION
R1807	401 037 5400	MT-GLAZE 1K JA 1/10W
R1808	401 037 5400	MT-GLAZE 1K JA 1/10W
R1831	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1833	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R2901	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R2902	401 038 0206	MT-GLAZE 20K JA 1/10W
R2903	401 037 5400	MT-GLAZE 1K JA 1/10W
R2904	401 037 5400	MT-GLAZE 1K JA 1/10W
	(JUMPERS)	
	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

COMPL PWB,TM-1

LOCATION	PARTS NO.	DESCRIPTION
	613 179 2388	VHR-778E ONLY
	613 179 3002	VHR-778G ONLY
	613 178 9944	VHR-788G ONLY
	(CONNECTORS)	
CN711	645 005 4761	SOCKET,31P (N.S.P),VHR-778G ONLY
OR	645 009 4361	SOCKET,FFC 31P (N.S.P),VHR-778G ONLY
CN714	645 005 4761	SOCKET,31P (N.S.P),EXCEPT VHR-778G
OR	645 009 4361	SOCKET,FFC 31P (N.S.P),EXCEPT VHR-778G
	(DIODES)	
D7101	407 012 4406	DIODE 1SS133
D7102	407 012 4406	DIODE 1SS133
D7103	407 012 4406	DIODE 1SS133
D7104	407 012 4406	DIODE 1SS133
D7123	407 163 3600	LED SEL2715Y-D, POWER SAVE LED, VHR-778G ONLY
OR	407 163 3501	LED SEL2715Y-C, POWER SAVE LED, VHR-778G ONLY
	(CAPACITORS)	
C7101	403 167 7002	ELECT 4.7U M 50V,EXCEPT VHR-778G
C7101	403 043 8802	ELECT 4.7U M 16V,VHR-778G ONLY
	(RESISTORS)	
R7105	401 013 4106	CARBON 120 JA 1/4W,VHR-778G ONLY
	(SWITCHES)	
S7101	645 001 9777	SWITCH,PUSH 1P-1T, POWER,VHR-778G ONLY
OR	645 011 5172	SWITCH,PUSH 1P-1T, POWER,VHR-778G ONLY
OR	645 011 5165	SWITCH,PUSH 1P-1T, POWER,VHR-778G ONLY
OR	645 006 2797	SWITCH,PUSH 1P-1T, POWER,VHR-778G ONLY
OR	645 008 8049	SWITCH,PUSH 1P-1T, POWER,VHR-778G ONLY
S7102	645 008 8049	SWITCH,PUSH 1P-1T, STOP/EJECT, VHR-778G ONLY
OR	645 011 5165	SWITCH,PUSH 1P-1T, STOP/EJECT, VHR-778G ONLY
OR	645 006 2797	SWITCH,PUSH 1P-1T, STOP/EJECT, VHR-778G ONLY
OR	645 001 9777	SWITCH,PUSH 1P-1T, STOP/EJECT, VHR-778G ONLY
OR	645 011 5172	SWITCH,PUSH 1P-1T, STOP/EJECT, VHR-778G ONLY
S7103	645 006 2797	SWITCH,PUSH 1P-1T, CH-UP,VHR-778G ONLY
OR	645 008 8049	SWITCH,PUSH 1P-1T, CH-UP,VHR-778G ONLY
OR	645 001 9777	SWITCH,PUSH 1P-1T, CH-UP,VHR-778G ONLY
OR	645 011 5172	SWITCH,PUSH 1P-1T, CH-UP,VHR-778G ONLY
OR	645 011 5165	SWITCH,PUSH 1P-1T, CH-UP,VHR-778G ONLY
S7103	645 001 9777	SWITCH,PUSH 1P-1T, CH-UP, EXCEPT VHR-778G
OR	645 006 2797	SWITCH,PUSH 1P-1T, CH-UP, EXCEPT VHR-778G
OR	645 008 8049	SWITCH,PUSH 1P-1T, CH-UP, EXCEPT VHR-778G
S7104	645 006 2797	SWITCH,PUSH 1P-1T, CH-DOWN, VHR-778G ONLY
OR	645 011 5165	SWITCH,PUSH 1P-1T, CH-DOWN, VHR-778G ONLY
OR	645 008 8049	SWITCH,PUSH 1P-1T, CH-DOWN, VHR-778G ONLY
OR	645 001 9777	SWITCH,PUSH 1P-1T, CH-DOWN, VHR-778G ONLY
OR	645 011 5172	SWITCH,PUSH 1P-1T, CH-DOWN, VHR-778G ONLY
S7104	645 001 9777	SWITCH,PUSH 1P-1T, CH-DOWN, EXCEPT VHR-778G
OR	645 006 2797	SWITCH,PUSH 1P-1T, CH-DOWN, EXCEPT VHR-778G
S7104	645 008 8049	SWITCH,PUSH 1P-1T, CH-DOWN, EXCEPT VHR-778G
S7105	645 006 2797	SWITCH,PUSH 1P-1T, REC,EXCEPT VHR-778G
OR	645 008 8049	SWITCH,PUSH 1P-1T, REC,EXCEPT VHR-778G
OR	645 001 9777	SWITCH,PUSH 1P-1T, REC,EXCEPT VHR-778G
S7106	645 008 8049	SWITCH,PUSH 1P-1T, PAUSE,VHR-778G ONLY
OR	645 011 5165	SWITCH,PUSH 1P-1T, PAUSE,VHR-778G ONLY
OR	645 006 2797	SWITCH,PUSH 1P-1T, PAUSE,VHR-778G ONLY
OR	645 001 9777	SWITCH,PUSH 1P-1T, PAUSE,VHR-778G ONLY
OR	645 011 5172	SWITCH,PUSH 1P-1T, PAUSE,VHR-778G ONLY
S7106	645 006 2797	SWITCH,PUSH 1P-1T, PAUSE, EXCEPT VHR-778G
OR	645 008 8049	SWITCH,PUSH 1P-1T, PAUSE, EXCEPT VHR-778G
OR	645 001 9777	SWITCH,PUSH 1P-1T, PAUSE, EXCEPT VHR-778G
S7107	645 008 8049	SWITCH,PUSH 1P-1T, REW,VHR-778G ONLY
OR	645 011 5165	SWITCH,PUSH 1P-1T, REW,VHR-778G ONLY
OR	645 006 2797	SWITCH,PUSH 1P-1T, REW,VHR-778G ONLY
OR	645 001 9777	SWITCH,PUSH 1P-1T, REW,VHR-778G ONLY
OR	645 011 5172	SWITCH,PUSH 1P-1T, REW,VHR-778G ONLY
S7108	645 006 2797	SWITCH,PUSH 1P-1T, PLAY,VHR-778G ONLY
OR	645 008 8049	SWITCH,PUSH 1P-1T, PLAY,VHR-778G ONLY
OR	645 001 9777	SWITCH,PUSH 1P-1T, PLAY,VHR-778G ONLY
OR	645 011 5165	SWITCH,PUSH 1P-1T, PLAY,VHR-778G ONLY
OR	645 011 5172	SWITCH,PUSH 1P-1T, PLAY,VHR-778G ONLY
S7108	645 001 9777	SWITCH,PUSH 1P-1T, FF,EXCEPT VHR-778G
OR	645 006 2797	SWITCH,PUSH 1P-1T, FF,EXCEPT VHR-778G
OR	645 008 8049	SWITCH,PUSH 1P-1T, FF,EXCEPT VHR-778G
S7109	645 006 2797	SWITCH,PUSH 1P-1T, FF,VHR-778G ONLY
OR	645 008 8049	SWITCH,PUSH 1P-1T, FF,VHR-778G ONLY
OR	645 011 5165	SWITCH,PUSH 1P-1T, FF,VHR-778G ONLY
OR	645 001 9777	SWITCH,PUSH 1P-1T, FF,VHR-778G ONLY
OR	645 011 5172	SWITCH,PUSH 1P-1T, FF,VHR-778G ONLY
S7109	645 001 9777	SWITCH,PUSH 1P-1T, REW,EXCEPT VHR-778G
OR	645 006 2797	SWITCH,PUSH 1P-1T, REW,EXCEPT VHR-778G
OR	645 008 8049	SWITCH,PUSH 1P-1T, REW,EXCEPT VHR-778G
S7110	645 006 2797	SWITCH,PUSH 1P-1T, REC,VHR-778G ONLY
OR	645 008 8049	SWITCH,PUSH 1P-1T, REC,VHR-778G ONLY
OR	645 001 9777	SWITCH,PUSH 1P-1T, REC,VHR-778G ONLY
OR	645 011 5165	SWITCH,PUSH 1P-1T, REC,VHR-778G ONLY
OR	645 011 5172	SWITCH,PUSH 1P-1T, REC,VHR-778G ONLY
S7110	645 001 9777	SWITCH,PUSH 1P-1T, STOP/EJECT, EXCEPT VHR-778G
OR	645 006 2797	SWITCH,PUSH 1P-1T, STOP/EJECT, EXCEPT VHR-778G
OR	645 008 8049	SWITCH,PUSH 1P-1T, STOP/EJECT, EXCEPT VHR-778G
S7111	645 006 2797	SWITCH,PUSH 1P-1T, PLAY,EXCEPT VHR-778G
OR	645 008 8049	SWITCH,PUSH 1P-1T, PLAY,EXCEPT VHR-778G
OR	645 001 9777	SWITCH,PUSH 1P-1T, PLAY,EXCEPT VHR-778G
	(REMOTE RECEIVERS)	
RR711	645 027 2332	UNIT,IR RECEIVER PACK
OR	645 021 5384	UNIT,IR RECEIVER PACK
	(DISPLAYS)	
A7101	645 020 9437	FLUORESCENT TUBE
OR	645 004 0597	FLUORESCENT TUBE
	(MISCELLANEOUS)	
	613 142 4913	HOLDER LED,VHR-778G ONLY
	613 163 1700	HOLDER IR, RR711
	613 173 7488	HOLDER IR, RR711
	613 139 2267	HOLDER FL

COMPL PWB,TM-2

LOCATION	PARTS NO.	DESCRIPTION
	613 178 9951	VHR-788G ONLY
	613 179 2395	VHR-778E ONLY
	(CONNECTORS)	
CN721	645 009 9014	SOCKET,RIBBON 3P (N.S.P),VHR-778E ONLY
CN721	645 003 1663	SOCKET,RIBBON 4P (N.S.P),VHR-788G ONLY
	(DIODES)	
D7204	408 035 5203	LED SEL2413EM-TP2-D,VHR-788G ONLY
	(RESISTORS)	
R7209	401 013 4106	CARBON 120 JA 1/4W,VHR-788G ONLY

LOCATION	PARTS NO.	DESCRIPTION
	(SWITCHES)	
S7201	645 008 8049	SWITCH,PUSH 1P-1T,EXCEPT VHR-778G
OR	645 001 9777	SWITCH,PUSH 1P-1T,EXCEPT VHR-778G
OR	645 006 2797	SWITCH,PUSH 1P-1T,EXCEPT VHR-778G

COMPL PCB,TM-9

613 179 1091

LOCATION	PARTS NO.	DESCRIPTION
	(CONNECTORS)	
CN771	613 113 3853	CONNECTOR,5P (N.S.P)
OR	645 003 0840	PLUG,5P (N.S.P)
	(INTEGRATED CIRCUITS)	
IC771	409 380 8604	IC SDA5650
	(CAPACITORS)	
C7701	403 060 7505	POLYESTER 0.033U J 50V
C7702	403 071 8102	CERAMIC 2200P K 50V
C7703	403 256 4608	MT-COMPO 0.33U J 50V
C7704	403 013 3004	CERAMIC 150P J 50V
C7705	403 068 0409	CERAMIC 0.1U Z 25V
C7706	403 129 0409	CERAMIC 0.01U K 16V
	(RESISTORS)	
R7701	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R7702	401 037 7008	MT-GLAZE 1.2M JA 1/10W
R7703	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R7704	401 037 7008	MT-GLAZE 1.2M JA 1/10W
R7705	401 037 5806	MT-GLAZE 1M JA 1/10W
R7706	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R7707	401 037 5707	MT-GLAZE 100K JA 1/10W
R7708	401 037 5608	MT-GLAZE 10K JA 1/10W

COMPL PWB,TN-3

613 173 4470 EXCEPT VHR-778E

LOCATION	PARTS NO.	DESCRIPTION
	(CONNECTORS)	
CN631	645 003 0925	PLUG,11P (N.S.P),EXCEPT VHR-778E
	(SEMICONDUCTORS)	
Q6301	405 099 8508	TR 2SC4640S,EXCEPT VHR-778E
OR	405 011 8401	TR 2SC1740S-Q,EXCEPT VHR-778E
OR	405 093 0607	TR KSC2785-Y,EXCEPT VHR-778E
OR	405 099 8607	TR 2SC4640T,EXCEPT VHR-778E
OR	405 011 8500	TR 2SC1740S-R,EXCEPT VHR-778E
	(INTEGRATED CIRCUITS)	
IC631	409 370 6504	IC TDA9840,EXCEPT VHR-778E
IC632	409 002 5905	IC BA403,EXCEPT VHR-778E
	(CRYSTAL DEVICES)	
X6301	645 002 0711	OSC,CRYSTAL 10MHZ,EXCEPT VHR-778E
	(CERAMIC RESONATORS)	
XF631	645 020 7914	DISCR,CERAMIC 5.74MHZ,EXCEPT VHR-778E
XF632	645 006 3022	CERAMIC FILTER 5.742MHZ,EXCEPT VHR-778E
	(VARIABLE RESISTORS)	
VR631	645 001 9487	VR,SEMI 22K N,EXCEPT VHR-778E
OR	645 003 5692	VR,SEMI,22K N,EXCEPT VHR-778E
	(INDUCTORS)	
L6301	645 003 7955	INDUCTOR,15U J,EXCEPT VHR-778E
OR	645 002 1428	INDUCTOR,15U J,EXCEPT VHR-778E
L6302	645 003 7627	INDUCTOR,10U J,EXCEPT VHR-778E
OR	645 003 6910	INDUCTOR,10U J,EXCEPT VHR-778E
L6303	645 003 7627	INDUCTOR,10U J,EXCEPT VHR-778E
OR	645 003 6910	INDUCTOR,10U J,EXCEPT VHR-778E
	(TRANSFORMERS)	
T6301	645 020 7921	TRANS,IF 54.7MHZ,EXCEPT VHR-778E
	(CAPACITORS)	
C6301	403 009 1809	CERAMIC 10P J 50V,EXCEPT VHR-778E
C6302	403 024 1501	CERAMIC 39P J 50V,EXCEPT VHR-778E
C6303	403 001 1906	CERAMIC 0.01U M 16V, EXCEPT VHR-778E
C6304	403 001 1906	CERAMIC 0.01U M 16V, EXCEPT VHR-778E
C6305	403 107 9905	ELECT 10U M 16V,EXCEPT VHR-778E
C6306	403 001 1906	CERAMIC 0.01U M 16V, EXCEPT VHR-778E
C6307	403 125 5606	ELECT 100U M 16V,EXCEPT VHR-778E
C6308	403 134 8100	ELECT 100U M 6.3V,EXCEPT VHR-778E
C6309	403 001 1906	CERAMIC 0.01U M 16V, EXCEPT VHR-778E
C6310	403 001 1906	CERAMIC 0.01U M 16V EXCEPT VHR-778E
C6311	403 001 1906	CERAMIC 0.01U M 16V, EXCEPT VHR-778E
C6312	403 121 3507	ELECT 4.7U M 50V,EXCEPT VHR-778E
C6313	403 121 3507	ELECT 4.7U M 50V,EXCEPT VHR-778E
C6314	403 107 9905	ELECT 10U M 16V,EXCEPT VHR-778E
C6315	403 001 1906	CERAMIC 0.01U M 16V, EXCEPT VHR-778E
C6316	403 121 9509	CERAMIC 0.1U Z 50V,EXCEPT VHR-778E
C6317	403 026 2209	CERAMIC 47P J 50V,EXCEPT VHR-778E
C6318	403 134 8100	ELECT 100U M 6.3V,EXCEPT VHR-778E
C6319	403 107 9905	ELECT 10U M 16V,EXCEPT VHR-778E
C6320	403 107 9905	ELECT 10U M 16V,EXCEPT VHR-778E
C6321	403 001 5102	CERAMIC 2200P M 16V, EXCEPT VHR-778E
	(RESISTORS)	
R6301	401 014 4006	CARBON 1.5K JA 1/4W, EXCEPT VHR-778E
R6303	401 018 2701	CARBON 330 JA 1/4W,EXCEPT VHR-778E
R6304	401 021 1807	CARBON 560 JA 1/4W,EXCEPT VHR-778E
R6305	401 012 5609	CARBON 1K JA 1/4W,EXCEPT VHR-778E
R6306	401 012 5609	CARBON 1K JA 1/4W,EXCEPT VHR-778E
R6307	401 013 6308	CARBON 12K JA 1/4W, EXCEPT VHR-778E
R6308	401 023 2703	CARBON 8.2K JA 1/4W, EXCEPT VHR-778E
R6311	401 020 1907	CARBON 4.7K JA 1/4W, EXCEPT VHR-778E
R6312	401 012 6903	CARBON 10K JA 1/4W, EXCEPT VHR-778E
R6313	401 017 2702	CARBON 27K JA 1/4W, EXCEPT VHR-778E

COMPL PWB,TN-5

613 161 6226 VHR-778E ONLY

LOCATION	PARTS NO.	DESCRIPTION
	(CONNECTORS)	
CN671	645 003 0925	PLUG,11P (N.S.P),VHR-778E ONLY
	(SEMICONDUCTORS)	
Q6701	405 014 4608	TR 2SC2412K-S,VHR-778E ONLY
OR	405 014 4509	TR 2SC2412K-R,VHR-778E ONLY
OR	405 015 8704	TR 2SC2812-L6,VHR-778E ONLY
OR	405 015 8407	TR 2SC2812-L5,VHR-778E ONLY
Q6741	405 002 6508	TR 2SA1179-M5,VHR-778E ONLY
OR	405 002 0407	TR 2SA1037K-S,VHR-778E ONLY
OR	405 002 0308	TR 2SA1037K-R,VHR-778E ONLY
OR	405 002 6706	TR 2SA1179-M6,VHR-778E ONLY
Q6742	405 002 6508	TR 2SA1179-M5,VHR-778E ONLY
OR	405 002 6706	TR 2SA1179-M6,VHR-778E ONLY
OR	405 002 0407	TR 2SA1037K-S,VHR-778E ONLY
OR	405 002 0308	TR 2SA1037K-R,VHR-778E ONLY
	(INTEGRATED CIRCUITS)	
IC671	409 374 6302	IC SAA7283(M2),VHR-778E ONLY
OR	409 344 9807	IC SAA7283GP(M1),VHR-778E ONLY
	(DIODES)	
D6701	407 169 8005	VARACTOR DI BB405B,VHR-778E ONLY
D6702	407 007 9904	DIODE GMA01,VHR-778E ONLY
OR	407 012 4406	DIODE 1SS133,VHR-778E ONLY
	(CRYSTAL DEVICES)	
X6701	645 007 7449	OSC,CRYSTAL 8.192MHZ,VHR-778E ONLY
	(INDUCTORS)	
L6701	645 003 7429	INDUCTOR,2.2U J,VHR-778E ONLY
OR	645 003 7023	INDUCTOR,2.2U J,VHR-778E ONLY
L6702	645 003 7429	INDUCTOR,2.2U J,VHR-778E ONLY
OR	645 003 7023	INDUCTOR,2.2U J,VHR-778E ONLY
L6703	645 003 7894	INDUCTOR,10U J,VHR-778E ONLY
OR	645 002 1411	INDUCTOR,10U J,VHR-778E ONLY
L6704	645 003 7429	INDUCTOR,2.2U J,VHR-778E ONLY
OR	645 003 7023	INDUCTOR,2.2U J,VHR-778E ONLY
L6705	645 003 7429	INDUCTOR,2.2U J,VHR-778E ONLY
OR	645 003 7023	INDUCTOR,2.2U J,VHR-778E ONLY
	(CAPACITORS)	
C6701	403 159 1001	CERAMIC 0.22U Z 16V,VHR-778E ONLY
C6702	403 068 0409	CERAMIC 0.1U Z 25V,VHR-778E ONLY
C6703	403 135 4002	ELECT 47U M 6.3V,VHR-778E ONLY

LOCATION	PARTS NO.	DESCRIPTION
C6704	403 159 1001	CERAMIC 0.22U Z 16V,VHR-778E ONLY
C6705	403 184 9300	MT-POLYEST 0.047U J 50V,VHR-778E ONLY
C6706	403 107 9905	ELECT 10U M 16V,VHR-778E ONLY
C6707	403 134 9602	ELECT 47U M 16V,VHR-778E ONLY
C6708	403 069 5601	CERAMIC 0.01U K 50V,VHR-778E ONLY
C6709	403 107 9905	ELECT 10U M 16V,VHR-778E ONLY
C6710	403 068 0409	CERAMIC 0.1U Z 25V,VHR-778E ONLY
C6711	403 008 7505	CERAMIC 10P D 50V,VHR-778E ONLY
C6712	403 024 7206	CERAMIC 390P J 50V,VHR-778E ONLY
C6714	403 069 5601	CERAMIC 0.01U K 50V,VHR-778E ONLY
C6715	403 107 9905	ELECT 10U M 16V,VHR-778E ONLY
C6716	403 018 7502	CERAMIC 220P J 50V,VHR-778E ONLY
C6717	403 107 9905	ELECT 10U M 16V,VHR-778E ONLY
C6718	403 068 0409	CERAMIC 0.1U Z 25V,VHR-778E ONLY
C6719	403 109 6308	ELECT 1U M 50V,VHR-778E ONLY
C6720	403 068 0409	CERAMIC 0.1U Z 25V,VHR-778E ONLY
C6721	403 069 5601	CERAMIC 0.01U K 50V,VHR-778E ONLY
C6722	403 107 9905	ELECT 10U M 16V,VHR-778E ONLY
C6723	403 168 6202	MT-POLYEST 0.33U J 50V,VHR-778E ONLY
C6724	403 072 1607	CERAMIC 0.022U K 50V,VHR-778E ONLY
C6725	403 026 2803	CERAMIC 47P J 50V,VHR-778E ONLY
C6726	403 026 2803	CERAMIC 47P J 50V,VHR-778E ONLY
C6727	403 068 0409	CERAMIC 0.1U Z 25V,VHR-778E ONLY
C6728	403 130 2904	ELECT 0.47U M 50V,VHR-778E ONLY
C6729	403 135 4002	ELECT 47U M 6.3V,VHR-778E ONLY
C6730	403 069 5601	CERAMIC 0.01U K 50V,VHR-778E ONLY
C6731	403 068 0409	CERAMIC 0.1U Z 25V,VHR-778E ONLY
C6732	403 135 4002	ELECT 47U M 6.3V,VHR-778E ONLY
C6733	403 069 5601	CERAMIC 0.01U K 50V,VHR-778E ONLY
C6734	403 125 5606	ELECT 100U M 16V,VHR-778E ONLY
C6741	403 069 5601	CERAMIC 0.01U K 50V,VHR-778E ONLY
C6742	403 069 5601	CERAMIC 0.01U K 50V,VHR-778E ONLY
C6743	403 073 0005	CERAMIC 3300P K 50V,VHR-778E ONLY
C6744	403 073 0005	CERAMIC 3300P K 50V,VHR-778E ONLY
C6745	403 107 9905	ELECT 10U M 16V,VHR-778E ONLY
C6746	403 107 9905	ELECT 10U M 16V,VHR-778E ONLY
	(RESISTORS)	
R6701	401 037 9200	MT-GLAZE 1.8K JA 1/10W,VHR-778E ONLY
R6702	401 038 3702	MT-GLAZE 33K JA 1/10W,VHR-778E ONLY
R6703	401 038 0701	MT-GLAZE 2.2K JA 1/10W,VHR-778E ONLY
R6704	401 037 8005	MT-GLAZE 15K JA 1/10W,VHR-778E ONLY
R6705	401 037 5400	MT-GLAZE 1K JA 1/10W,VHR-778E ONLY
R6706	401 037 5202	MT-GLAZE 100 JA 1/10W,VHR-778E ONLY
R6708	401 038 0701	MT-GLAZE 2.2K JA 1/10W,VHR-778E ONLY
R6709	401 037 5608	MT-GLAZE 10K JA 1/10W,VHR-778E ONLY
R6710	401 038 0800	MT-GLAZE 22K JA 1/10W,VHR-778E ONLY
R6712	401 037 5004	MT-GLAZE 0.000 ZA 1/10W,VHR-778E ONLY
R6714	401 037 5608	MT-GLAZE 10K JA 1/10W,VHR-778E ONLY
R6715	401 038 0800	MT-GLAZE 22K JA 1/10W,VHR-778E ONLY
R6716	401 037 5806	MT-GLAZE 1M JA 1/10W,VHR-778E ONLY
R6717	401 037 5608	MT-GLAZE 10K JA 1/10W,VHR-778E ONLY
R6718	401 038 9407	MT-GLAZE 680K JA 1/10W,VHR-778E ONLY
R6741	401 037 7909	MT-GLAZE 1.5K JA 1/10W,VHR-778E ONLY
R6742	401 037 7909	MT-GLAZE 1.5K JA 1/10W,VHR-778E ONLY
R6743	401 037 7909	MT-GLAZE 1.5K JA 1/10W,VHR-778E ONLY
R6744	401 037 7909	MT-GLAZE 1.5K JA 1/10W,VHR-778E ONLY
R6745	401 038 0701	MT-GLAZE 2.2K JA 1/10W,VHR-778E ONLY
R6746	401 038 0701	MT-GLAZE 2.2K JA 1/10W,VHR-778E ONLY
R6747	401 037 5400	MT-GLAZE 1K JA 1/10W,VHR-778E ONLY
R6748	401 037 5400	MT-GLAZE 1K JA 1/10W,VHR-778E ONLY

COMPL PWB,AD-6

LOCATION	PARTS NO.	DESCRIPTION
	613 179 8366	VHR-788G ONLY
	(CONNECTORS)	
CN261	613 010 7947	PLUG (N.S.P),VHR-788G ONLY
	(SEMICONDUCTORS)	
Q2613	405 000 2007	TR DTA144EK,VHR-788G ONLY
Q2651	405 083 5209	TR DTC343TK,VHR-788G ONLY
Q2652	405 083 5209	TR DTC343TK,VHR-788G ONLY
	(INTEGRATED CIRCUITS)	
IC261	409 405 6004	IC MM1369BD,VHR-788G ONLY
IC262	409 192 7109	IC BA15218F,VHR-788G ONLY
OR	409 192 7109	IC BA15218F,VHR-788G ONLY
	(CAPACITORS)	
C2601	403 150 6500	ELECT 22U M 16V,VHR-788G ONLY
C2602	403 075 0706	CERAMIC 6800P K 50V,VHR-788G ONLY
C2603	403 010 1102	CERAMIC 1000P J 50V,VHR-788G ONLY
C2604	403 168 6103	MT-POLYEST 0.1U J 50V,VHR-788G ONLY
C2607	403 163 8409	ELECT 47U M 16V,VHR-788G ONLY
C2609	403 191 8808	ELECT 2.2U M 50V,VHR-788G ONLY
C2614	403 069 5601	CERAMIC 0.01U K 50V,VHR-788G ONLY
C2615	403 069 5601	CERAMIC 0.01U K 50V,VHR-788G ONLY
C2616	403 069 5601	CERAMIC 0.01U K 50V,VHR-788G ONLY
C2617	403 069 5601	CERAMIC 0.01U K 50V,VHR-788G ONLY
C2619	403 010 1102	CERAMIC 1000P J 50V,VHR-788G ONLY
C2620	403 168 6103	MT-POLYEST 0.1U J 50V,VHR-788G ONLY
C2622	403 075 0706	CERAMIC 6800P K 50V,VHR-788G ONLY
C2623	403 150 6500	ELECT 22U M 16V,VHR-788G ONLY
C2624	403 193 7809	ELECT 100U M 16V,VHR-788G ONLY
C2632	403 189 2405	ELECT 10U M 16V,VHR-788G ONLY
C2636	403 189 2405	ELECT 10U M 16V,VHR-788G ONLY
C2651	403 139 1601	ELECT 22U M 16V,VHR-788G ONLY
C2652	403 150 6500	ELECT 22U M 16V,VHR-788G ONLY
	(RESISTORS)	
R2602	401 038 8004	MT-GLAZE 5.6M JA 1/10W,VHR-788G ONLY
R2604	401 037 9507	MT-GLAZE 1.8M JA 1/10W,VHR-788G ONLY
R2605	401 038 2408	MT-GLAZE 2.7M JA 1/10W,VHR-788G ONLY
R2606	401 037 5400	MT-GLAZE 1K JA 1/10W,VHR-788G ONLY
R2607	401 038 6505	MT-GLAZE 47K JA 1/10W,VHR-788G ONLY
R2610	401 037 5400	MT-GLAZE 1K JA 1/10W,VHR-788G ONLY
R2618	401 038 9704	MT-GLAZE 7.5K JA 1/10W,VHR-788G ONLY
R2623	401 037 5806	MT-GLAZE 1M JA 1/10W,VHR-788G ONLY
R2631	401 038 7700	MT-GLAZE 5.6K JA 1/10W,VHR-788G ONLY
R2632	401 038 5102	MT-GLAZE 3.9K JA 1/10W,VHR-788G ONLY
R2636	401 038 5102	MT-GLAZE 3.9K JA 1/10W,VHR-788G ONLY
R2637	401 038 7700	MT-GLAZE 5.6K JA 1/10W,VHR-788G ONLY
R2651	401 038 7700	MT-GLAZE 5.6K JA 1/10W,VHR-788G ONLY
R2652	401 038 7700	MT-GLAZE 5.6K JA 1/10W,VHR-788G ONLY
R2653	401 038 0602	MT-GLAZE 220 JA 1/10W,VHR-788G ONLY
R2654	401 038 0602	MT-GLAZE 220 JA 1/10W,VHR-788G ONLY
R2661	401 037 6704	MT-GLAZE 1.2K JA 1/10W,VHR-788G ONLY
R2662	401 037 5608	MT-GLAZE 10K JA 1/10W,VHR-788G ONLY
R2663	401 037 6704	MT-GLAZE 1.2K JA 1/10W,VHR-788G ONLY
R2664	401 037 5608	MT-GLAZE 10K JA 1/10W,VHR-788G ONLY
	(JUMPERS)	
	401 037 5004	MT-GLAZE 0.000 ZA 1/10W,VHR-788G ONLY
	(MISCELLANEOUS)	
	613 053 8055	FIXER,VHR-788G ONLY

FLEXIBLE FLAT CABLE

	645 017 0645	FLEXIBLE FLAT CABLE

COMPL PWB,MC-1

	613 173 9451	EXCEPT VHR-778E
	613 175 0913	VHR-778E ONLY
	(CONNECTORS)	
CN801	645 007 8446	SOCKET,12P (N.S.P)
	(CAPACITORS)	
C8001	403 121 9509	CERAMIC 0.1U Z 50V
	(RESISTORS)	
R8001	401 015 2605	CARBON 1.8K JA 1/4W
R8002	401 023 1607	CARBON 820 JA 1/4W
R8003	401 017 0708	CARBON 270 JA 1/4W
R8004	401 014 2804	CARBON 150 JA 1/4W
R8005	401 017 0708	CARBON 270 JA 1/4W,VHR-778E ONLY
	(SWITCHES)	
S8002	645 003 4589	SWITCH,DETECTOR 1P-1T,
OR	645 009 3388	SWITCH,DETECTOR 1P-1T,
	(MISCELLANEOUS)	
	613 152 4002	SPACER,MC1

ACCESSORIES

645 026 7581	REMOCON,INFRARED,VHR-778E ONLY WITH COVER BATTERY
645 027 5883	REMOCON,INFRARED,VHR-778G ONLY WITH COVER BATTERY

LOCATION	PARTS NO.	DESCRIPTION
	645 027 0888	REMOCON,INFRARED,VHR-788GONLY WITH COVER BATTERY
	613 179 2586	COVER BATTERY,FOR REMOCON,INFRARED
	613 180 4098	INSTRUCTION MANUAL,VHR-778G ONLY
	613 179 4115	INSTRUCTION MANUAL,VHR-788G ONLY
	613 179 2333	INSTRUCTION MANUAL,VHR-778E ONLY
	645 023 4170	CABLE,ANT PAL
OR	645 025 1382	CABLE,ANT PAL
	⚠645 019 1923	CORD,POWER,VHR-778E ONLY
OR	⚠645 023 4156	CORD,POWER,VHR-778E ONLY
OR	⚠613 136 6411	CORD,POWER,VHR-778E ONLY
	⚠645 024 0522	CORD,POWER,EXCEPT VHR-778E
OR	⚠645 025 0767	CORD,POWER,EXCEPT VHR-778E
OR	⚠645 023 4163	CORD,POWER,EXCEPT VHR-778E
OR	⚠645 028 3086	CORD,POWER,EXCEPT VHR-778E

PACKING MATERIALS

613 179 2326	CARTON CASE,VHR-778E ONLY
613 180 3374	CARTON CASE,VHR-778G ONLY
613 179 4191	CARTON CASE,VHR-788G ONLY
613 173 2537	CUSHION, FRONT
613 173 2544	CUSHION, BACK
613 139 8047	POLYE COVER,INNER-K

SANYO

SANYO Electric Co.,Ltd.
Osaka, Japan

Feb./'98/2500 NS Printed in Japan

VHR-778E,VHR-778G,VHR-788G

BLOCK DIAGRAMS,CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS

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AP4HN/E3,G3,G2 82N

REFERENCE No.SM531632

NOTES:

1. All resistance values in "OHMS" unless otherwise noted.
   (K=1,000 ; M=1,000,000)
2. All capacitance values in "μF" unless otherwise noted.
   p=pico farad ; μ ,u or U=micro farad
3. All inductance values in "μH" unless otherwise noted.
   μ ,u or U=micro henry ; m=milli henry

PRODUCTSAFETYNOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUEAREOFSPECIALSIGNIFICANCETOPRODUCTSAFETY. SHOULDANYCOMPONENTDESIGNATEDBYASYMBOLNEEDTO BEREPLACED,USEONLYTHEPARTDESIGNATEDINTHEPARTS LIST.

DONOTDEVIATEFROMTHERESISTANCE,WATTAGEANDVOLTAGERATINGSSHOWN.

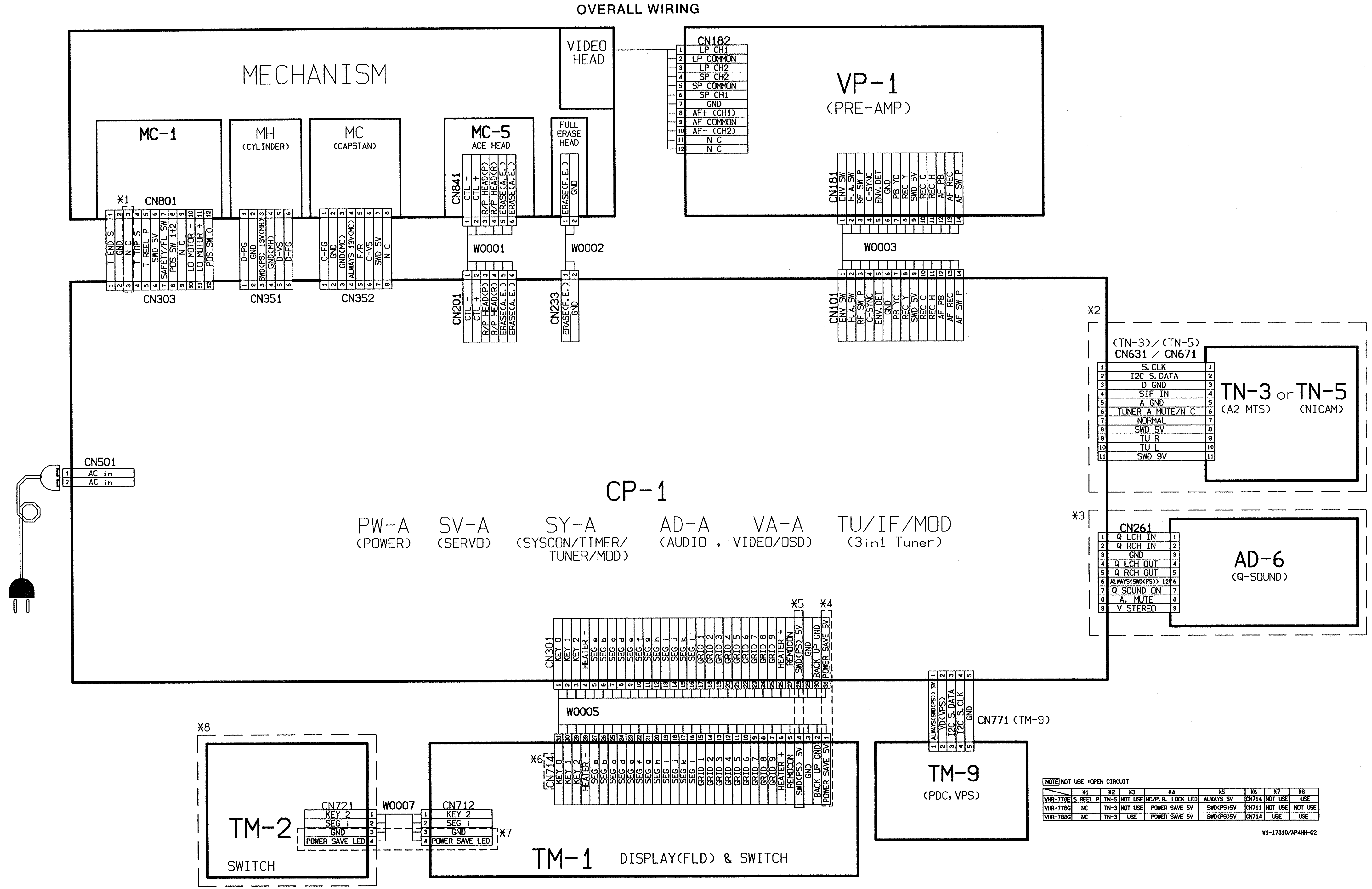
EXPLANATORY NOTES (EXAMPLES)

Resistor 10K:1/16J means 10kilo ohm ±5%, 1/16watt max.
1M:1/10K means 1mega ohm ±10%, 1/10watt max.
Capacitor 0.047:F means 0.047micro farad, Ftype.
Electrolytic capacitor
10:16 means 10micro farad, 16volt max.
Inductor 330:J means 330micro henry ±5%
470:K means 470micro henry ±10%
No description J or K means ±5%

PAL-C-EX

1. OVERALL WIRING,MECHANISM CONNECTION & BLOCK DIAGRAMS

OVERALL WIRING

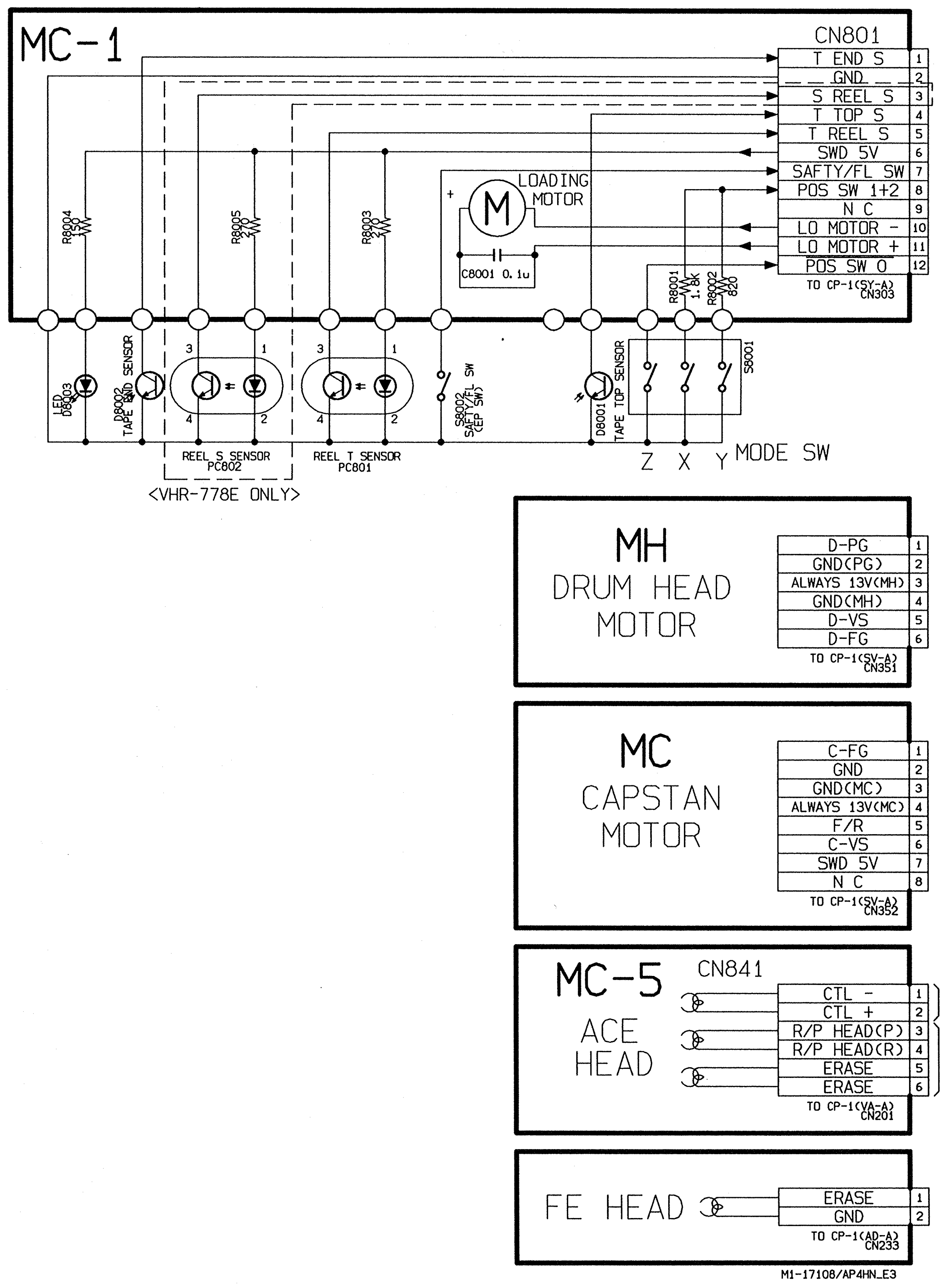

MECHANISM
VIDEO HEAD
MC-1
MH (CYLINDER)
MC (CAPSTAN)
MC-5 ACE HEAD
FULL ERASE HEAD
CN801
CN303
CN351
CN352
CN841
W0001
W0002
CN201
CN233
CN182
LP CH1
LP COMMON
LP CH2
SP CH2
SP COMMON
SP CH1
GND
AF+ (CH1)
AF COMMON
AF- (CH2)
N C
VP-1 (PRE-AMP)
CN181
W0003
CN101
CN501
AC in
CP-1
PW-A (POWER)
SV-A (SERVO)
SY-A (SYSCON/TIMER/ TUNER/MOD)
AD-A (AUDIO ,
VA-A VIDEO/OSD)
TU/IF/MOD (3in1 Tuner)
(TN-3)/(TN-5) CN631 / CN671
S.CLK
I2C S.DATA
D GND
SIF IN
A GND
TUNER A MUTE/N C
NORMAL
SWD 5V
TU R
TU L
SWD 9V
TN-3 or TN-5
(A2 MTS) (NICAM)
CN261
Q LCH IN
Q RCH IN
GND
Q LCH OUT
Q RCH OUT
ALWAYS(SWD(PS)) 12V
Q SOUND ON
A. MUTE
V STEREO
AD-6 (Q-SOUND)
CN301
W0005
CN714
CN771 (TM-9)
TM-9 (PDC,VPS)
CN721
CN712
W0007
KEY 2
SEG i
GND
POWER SAVE LED
TM-2 SWITCH
TM-1 DISPLAY(FLD) & SWITCH
※1
※2
※3
※4
※5
※6
※7
※8

NOTE NOT USE :OPEN CIRCUIT

	※1	※2	※3	※4	※5	※6	※7	※8
VHR-778E	S REEL P	TN-5	NOT USE	NC/P.R. LOCK LED	ALWAYS 5V	CN714	NOT USE	USE
VHR-778G	NC	TN-3	NOT USE	POWER SAVE 5V	SWD(PS)5V	CN711	NOT USE	NOT USE
VHR-788G	NC	TN-3	USE	POWER SAVE 5V	SWD(PS)5V	CN714	USE	USE

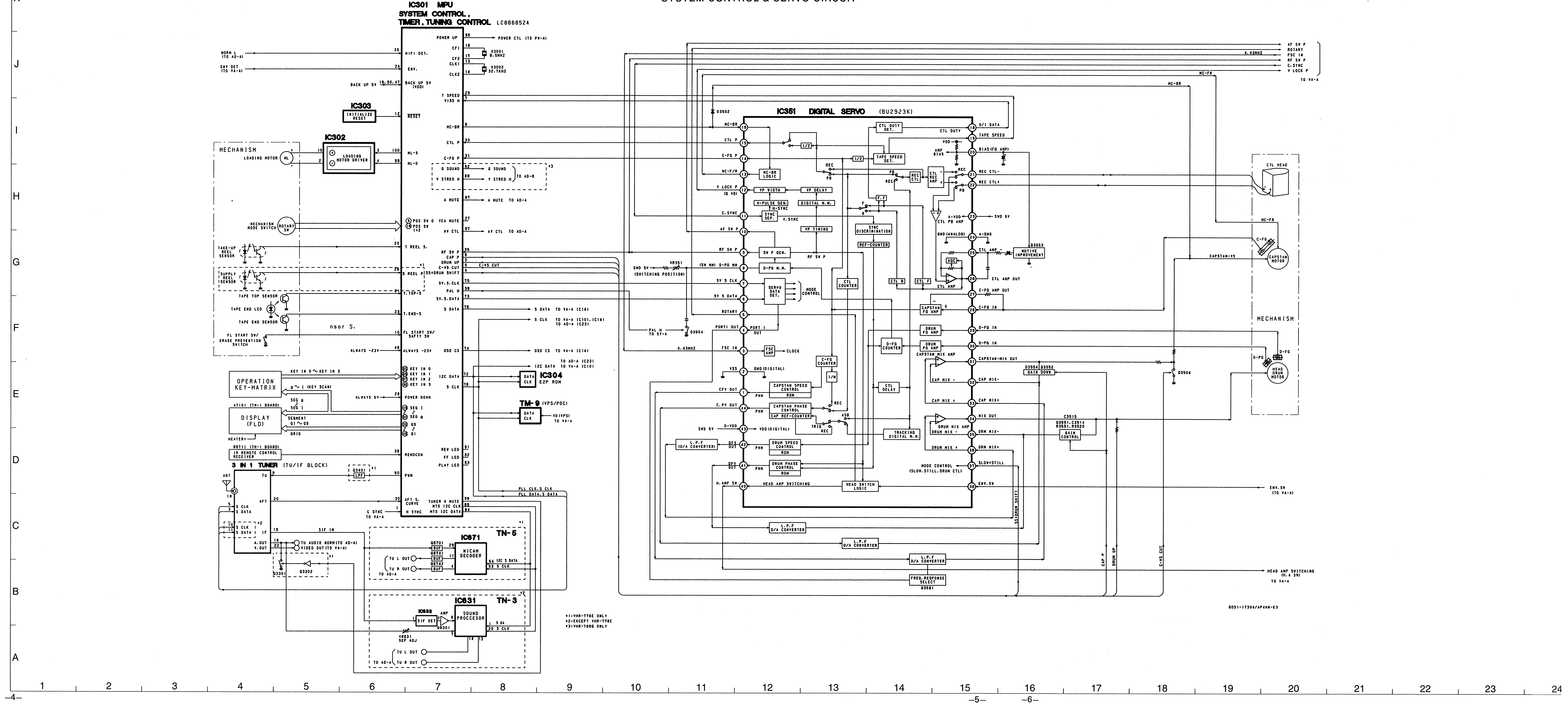
M1-17310/AP4HN-G2

MECHANISM CONNECTION


MC-1
CN801
T END S
GND
S REEL S
T TOP S
T REEL S
SWD 5V
SAFTY/FL SW
POS SW 1+2
N C
LO MOTOR -
LO MOTOR +
POS SW O
TO CP-1(SY-A) CN303
LOADING MOTOR
C8001 0.1u
R8004
R8005
R8003
R8001
R8002
LED D8003
TAPE END SENSOR D8002
REEL S SENSOR PC802
REEL T SENSOR PC801
<VHR-778E ONLY>
SAFTY SW (EP SW) S8002
TAPE TOP SENSOR D8001
S8001
Z X Y MODE SW
MH DRUM HEAD MOTOR
D-PG
GND(PG)
ALWAYS 13V(MH)
GND(MH)
D-VS
D-FG
TO CP-1(SY-A) CN351
MC CAPSTAN MOTOR
C-FG
GND
GND(MC)
ALWAYS 13V(MC)
F/R
C-VS
SWD 5V
N C
TO CP-1(SY-A) CN352
MC-5 ACE HEAD
CN841
CTL -
CTL +
R/P HEAD(P)
R/P HEAD(R)
ERASE
ERASE
TO CP-1(VA-A) CN201
FE HEAD
ERASE
GND
TO CP-1(AD-A) CN233

M1-17108/AP4HN_E3

SYSTEM CONTROL & SERVO CIRCUIT


IC301 MPU
SYSTEM CONTROL, TIMER, TUNING CONTROL LC866852A
POWER UP
POWER CTL (TO PV-A)
HIFI DET.
NORM L (TO AD-A)
ENV.
ENV DET (TO VA-A)
CF1
CF2
CLK1
CLK2
X3001 8.5MHZ
X3002 32.7KHZ
BACK UP 5V
18.90.47
BACK UP 5V (VDD)
T SPEED
VISS H
IC303
INITIALIZE RESET
RESET
MC-BR
CTL P
C-FG P
IC302
LOADING MOTOR DRIVER
MECHANISM
LOADING MOTOR
ML
ML-S
ML-D
Q SOUND
V STREO H
TO AD-B
*3
A MUTE
A MUTE TO AD-A
MECHANISM MODE SWITCH
ROTARY SW
POS SW 0
POS SW 1+2
YCA MUTE
AV CTL
AV CTL TO AD-A
TAKE-UP REEL SENSOR
T REEL S.
SUPPLY REEL SENSOR
S REEL P
*1
RF SW P
CAP P
DRUM UP
C-VS CUT
SS+DRUM SHIFT
SV.S.CLK
PAL H
SV.S.DATA
TAPE TOP SENSOR
T.TOP-S
TAPE END LED
TAPE END SENSOR
T.END-S
nsor S.
FL START SW/ ERASE PREVENTION SWITCH
FL START SW/ SAFTY SW
ALWAYS -23V
S DATA
S DATA TO VA-A IC141
S CLK
S CLK TO VA-A IC101, IC141 TO AD-A IC231
OSD CS
OSD CS TO VA-A IC141
I2C DATA TO AD-A IC231 TO VA-A IC101
OPERATION KEY-MATRIX
KEY IN 0 ~ KEY IN 3
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
a ~ l (KEY SCAN)
ALWAYS 5V
POWER DOWN
SEG a ~ SEG l
A7101 (TM-1 BOARD)
DISPLAY (FLD)
SEG l
SEG a
SEGMENT G1 ~ G9
G9
G1
GRID
HEATER+
RR711 (TM-1 BOARD)
IR REMOTE CONTROL RECEIVER
REMOCON
I2C DATA
S CLK
DATA CLK
IC304
E2P ROM
TM-9 (VPS/PDC)
VD (VPS) TO VA-A
REV LED
FF LED
PLAY LED
3 IN 1 TUNER (TU/IF BLOCK)
ANT
IN
TU
Q3401 LPF
PWM
AFT
AFT S. CURVE
S CLK
S DATA
*2
IF
A. OUT
V. OUT
C SYNC TO VA-A
H SYNC
TUNER A MUTE
MTS I2C CLK
MTS I2C DATA
PLL CLK. S CLK
PLL DATA. S DATA
SIF IN
TU AUDIO NORM (TO AD-A)
VIDEO OUT (TO VA-A)
Q3301
Q3302
IC871
TN-5
Q8701 BUF
Q8741 BUF
Q8742 BUF
NICAM DECODER
TU L OUT
TU R OUT
TO AD-A
I2C S DATA
S CLK
IC831
TN-3
IC832
SIF DET
AMP
Q8301
VR831 SEP ADJ
SOUND PROCCESOR
S DA
S CLK
IC351 DIGITAL SERVO (BU2923K)
D3502
MC-BR
CTL P
C-FG P
MC-F/R
V LOCK P (Q VD)
C.SYNC
AF SW P
RF SW P
(SW MM) D-PG MM
SV S CLK
SV S DATA
ROTARY
PORT1 OUT
FSC IN
VSS
GND (DIGITAL)
CFV OUT
C.PV OUT
D-VDD
DFV OUT
DPV OUT
H.AMP SW
MC-BR LOGIC
1/2
TAPE SPEED DET.
CTL DUTY DET.
CTL DUTY
VP WIDTH
VP DELAY
H-PULSE GEN.
H-SYNC
DIGITAL M.M.
SYNC SEP.
V.SYNC
VP TIMING
SYNC DISCRIMINATION
REF-COUNTER
SV P GEN.
RF SW P
D-PG M.M.
SERVO DATA DET.
MODE CONTROL
VR351
SWD 5V (SWITCHING POSITION)
PAL H TO SY-A
Q3554
4.43MHZ
PORT 1 OUT
FSC AMP
CLOCK
CTL COUNTER
C-FG COUNTER
1/N
CAPSTAN SPEED CONTROL ROM
CAPSTAN PHASE CONTROL CAP REF-COUNTER
PWM
REC
PB
ASB
TRIG
VDD (DIGITAL)
SWD 5V
L.P.F (D/A CONVERTER)
DRUM SPEED CONTROL ROM
DRUM PHASE CONTROL ROM
HEAD AMP SWITCHING
HEAD SWITCH LOGIC
F.F
F
R
CTL R
CTL F
CTL DELAY
D-FG COUNTER
TRACKING DIGITAL M.M.
REC CTL
CTL REC AMP
CTL PB AMP
AMP BIAS
VDD
AGC
CTL AMP
0/1 DATA
TAPE SPEED
BIAS (FG AMP)
REC CTL-
REC CTL+
A-VDD
SWD 5V
GND (ANALOG)
A-GND
CTL AMP -
Q3553
MOTIVE IMPROVEMENT
CTL AMP OUT
C-FG AMP OUT
CAPSTAN FG AMP
C-FG IN
DRUM FG AMP
D-FG IN
DRUM PG AMP
D-PG IN
CAPSTAN MIX AMP
CAPSTAN-MIX OUT
CAP MIX -
CAP MIX +
D3554 Q3552
GAIN DOWN
DRUM MIX AMP
MIX OUT
DRUM MIX -
DRM MIX-
DRUM MIX +
DRM MIX+
C3515
Q3551, C3514 R3551, R3520
GAIN CONTROL
MODE CONTROL (SLOW, STILL, DRUM CTL)
SLOW+STILL
ENV.SW
L.P.F D/A CONVERTER
FREQ. RESPONSE SELECT
Q3581
SS+DRUM SHIFT
CAP P
DRUM UP
C-VS CUT
AF SW P
ROTARY
FSC IN
RF SW P
C.SYNC
V LOCK P
TO VA-A
MC-FR
MC-BR
CTL HEAD
C-FG
CAPSTAN-VS
CAPSTAN MOTOR
MECHANISM
D-PG
D-FG
HEAD DRUM MOTOR
Q3504
ENV.SW (TO VA-A)
HEAD AMP SWITCHING (H.A SW) TO VA-A
K
J
I
H
G
F
E
D
C
B
A
1
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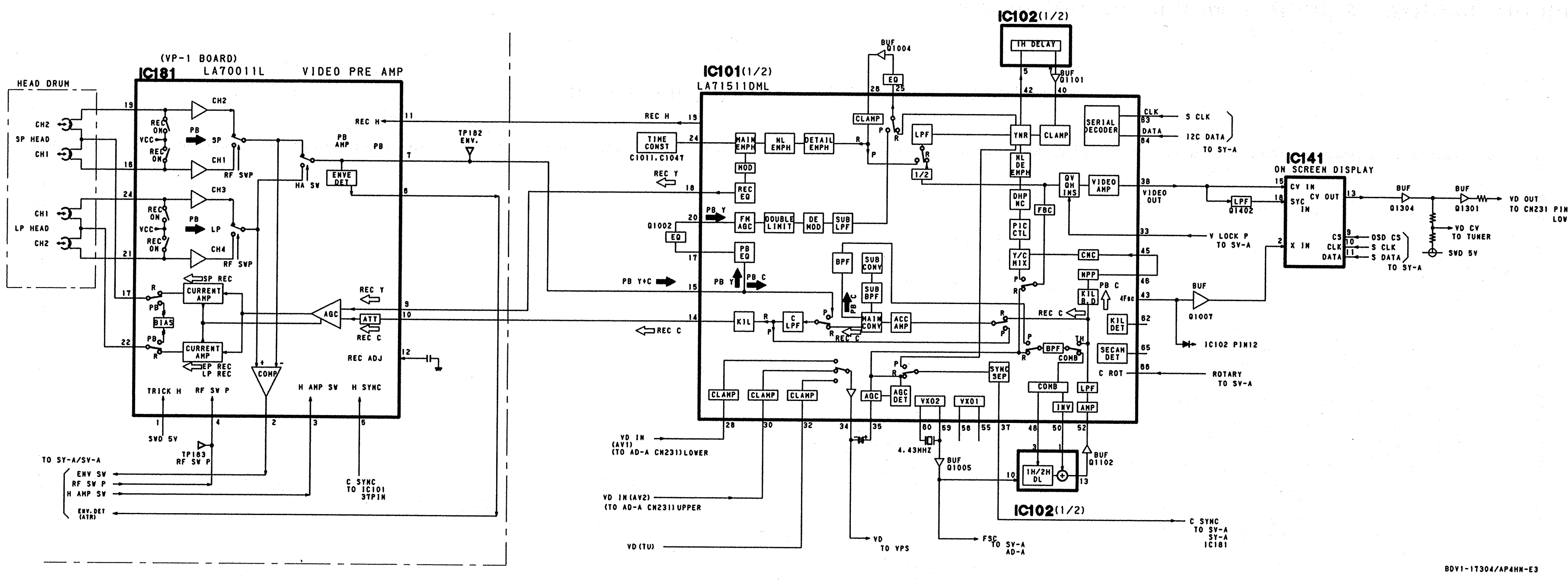
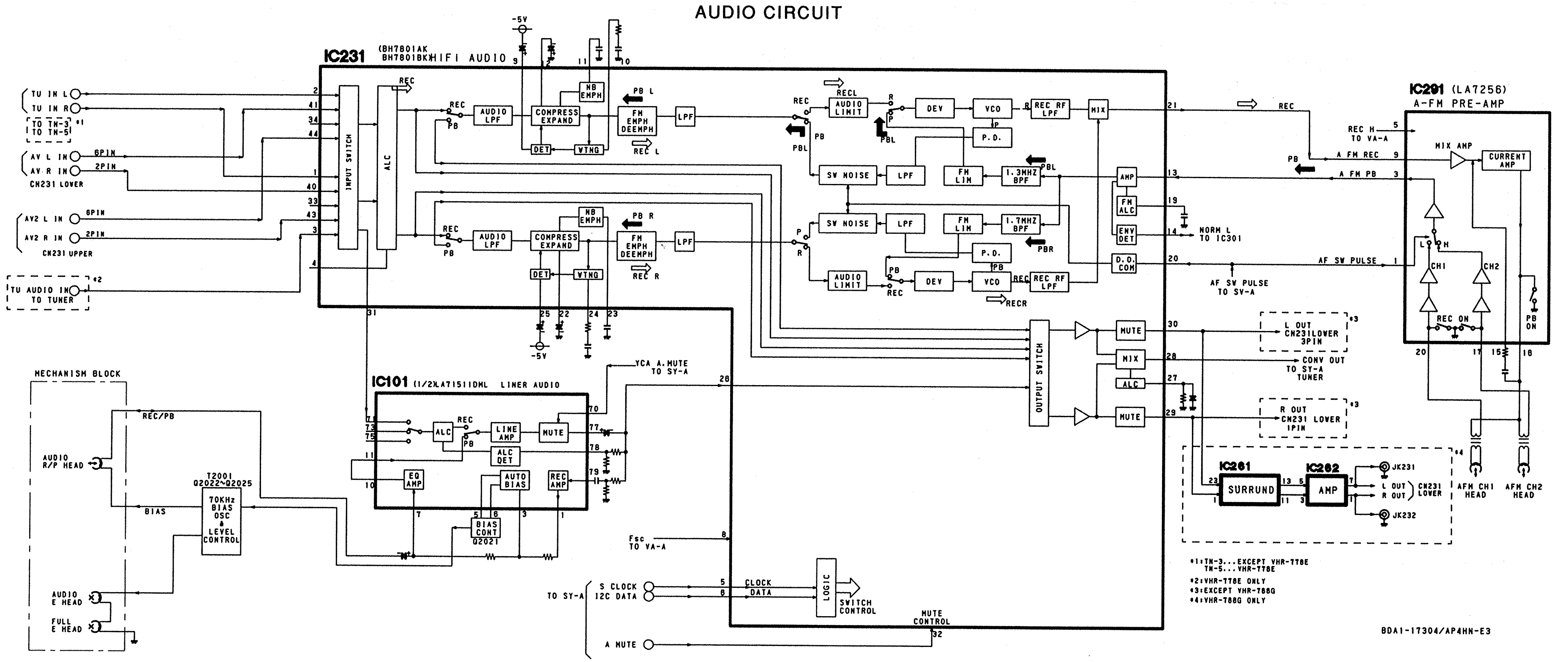
*1:VHR-778E ONLY
*2:EXCEPT VHR-778E
*3:VHR-788G ONLY

8DS1-17304/AP4HN-E3

VIDEO CIRCUIT


(VP-1 BOARD)
IC181 LA70011L VIDEO PRE AMP
HEAD DRUM
CH2
SP HEAD
CH1
LP HEAD
CH1
CH2
REC ON
VCC
PB
SP
LP
CH1
CH2
CH3
CH4
RF SWP
HA SW
PB AMP
ENVE DET
REC H
SP REC
CURRENT AMP
BIAS
EP REC
LP REC
AGC
ATT
REC Y
REC C
REC ADJ
COMP
TRICK H
RF SW P
H AMP SW
H SYNC
SWD 5V
TP183 RF SW P
TP182 ENV.
TO SY-A/SV-A
ENV SW
RF SW P
H AMP SW
ENV.DET (ATR)
C SYNC TO IC101 37PIN
IC101(1/2) LA71511DML
BUF Q1004
EQ
CLAMP
TIME CONST C1011,C1047
MAIN EMPH
NL EMPH
DETAIL EMPH
MOD
REC EQ
FM AGC
DOUBLE LIMIT
DE MOD
SUB LPF
Q1002
EQ
PB EQ
PB Y+C
PB Y
PB C
BPF
SUB CONV
SUB BPF
MAIN CONV
ACC AMP
KIL
C LPF
LPF
1/2
YNR
NL DE EMPH
DHP NC
PIC CTL
Y/C MIX
FBC
QV ON INS
VIDEO AMP
CNC
NPP
KIL B.D
KIL DET
SECAM DET
BPF
COMB
SYNC SEP
AGC
AGC DET
VXO2
VXO1
INV
AMP
SERIAL DECODER
CLK
DATA
S CLK
I2C DATA
TO SY-A
IC102(1/2)
1H DELAY
BUF Q1101
VIDEO OUT
Y LOCK P TO SV-A
4Fsc
BUF Q1007
IC102 PIN12
C ROT
ROTARY TO SV-A
VD IN (AV1) (TO AD-A CN231)LOWER
VD IN(AV2) (TO AD-A CN231)UPPER
VD(TU)
4.43MHZ
BUF Q1005
IC102(1/2)
1H/2H DL
BUF Q1102
VD TO VPS
FSC TO SY-A AD-A
C SYNC TO SV-A SY-A IC181
IC141 ON SCREEN DISPLAY
CV IN
SYC IN
CV OUT
X IN
CS
CLK
DATA
LPF Q1402
BUF Q1304
BUF Q1301
VD OUT TO CN231 PIN19 LOWER
VD CV TO TUNER
SWD 5V
OSD CS
S CLK
S DATA
TO SY-A
BDV1-17304/AP4HN-E3

AUDIO CIRCUIT


IC231 (BH7801AK BH7801BK) HIFI AUDIO
-5V
TU IN L
TU IN R
TO TN-3 *1
TO TN-5
AV L IN 6PIN
AV R IN 2PIN
CN231 LOWER
AV2 L IN 6PIN
AV2 R IN 2PIN
CN231 UPPER
TU AUDIO IN *2
TO TUNER
INPUT SWITCH
ALC
REC
PB
AUDIO LPF
COMPRESS EXPAND
NR EMPH
DET
VTNG
FM EMPH DEEMPH
LPF
PB L
PB R
REC L
REC R
RECL
AUDIO LIMIT
DEV
VCO
REC RF LPF
P.D.
MIX
PBL
PBR
SW NOISE
FM LIM
1.3MHZ BPF
1.7MHZ BPF
AMP
FM ALC
ENV DET
D.O. COM
OUTPUT SWITCH
MUTE
MIX
ALC
MUTE
NORM L TO IC301
AF SW PULSE
AF SW PULSE TO SV-A
L OUT CN231LOWER 3PIN *3
CONV OUT TO SY-A TUNER
R OUT CN231 LOWER 1PIN *3
IC261 SURRUND
IC262 AMP
L OUT
R OUT
CN231 LOWER
JK231
JK232
*4
IC291 (LA7256) A-FM PRE-AMP
REC H TO VA-A
A FM REC
A FM PB
MIX AMP
CURRENT AMP
CH1
CH2
REC ON
PB ON
AFM CH1 HEAD
AFM CH2 HEAD
IC101 (1/2)LA71511DML LINER AUDIO
ALC
LINE AMP
MUTE
ALC DET
EQ AMP
AUTO BIAS
REC AMP
BIAS CONT Q2021
YCA A.MUTE TO SY-A
MECHANISM BLOCK
REC/PB
AUDIO R/P HEAD
T2001 Q2022~Q2025
70KHz BIAS OSC & LEVEL CONTROL
BIAS
AUDIO E HEAD
FULL E HEAD
Fsc TO VA-A
TO SY-A
S CLOCK
I2C DATA
CLOCK
DATA
LOGIC
SWITCH CONTROL
MUTE CONTROL
A MUTE
BDA1-17304/AP4HN-E3
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
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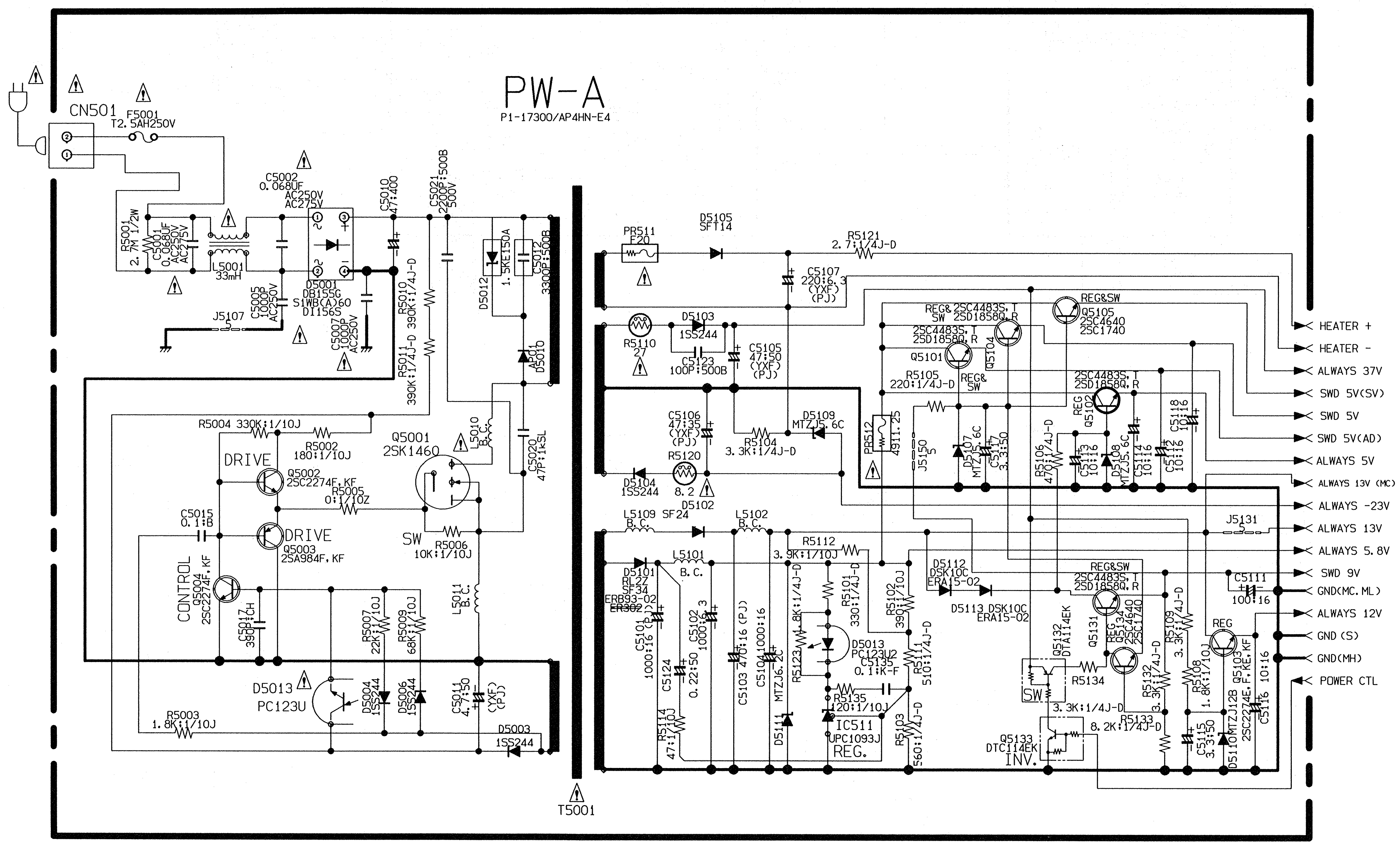
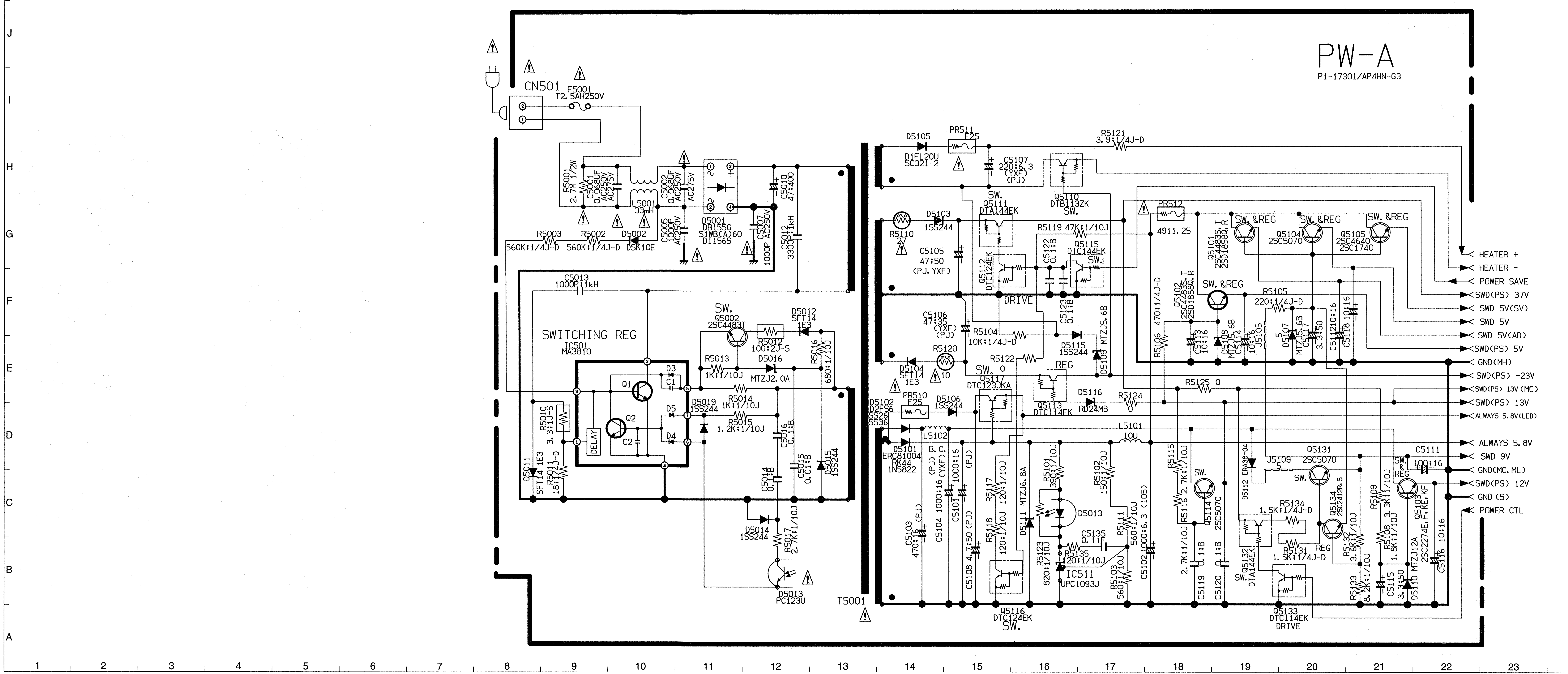
15

*1:TN-3...EXCEPT VHR-T78E
TN-5...VHR-T78E
*2:VHR-T78E ONLY
*3:EXCEPT VHR-T88G
*4:VHR-T88G ONLY

CP-1 BOARD (PW-A) POWER SUPPLY (VHR-778E ONLY)


PW-A
P1-17300/AP4HN-E4
CN501
F5001 T2. 5AH250V
R5001 2. 7M 1/2W
C5001 0. 068UF AC250V AC275V
C5002 0. 068UF AC250V AC275V
L5001 33mH
C5005 1000P AC250V
D5001 DB155G S1WB(A)60 DI156S
C5007 1000P AC250V
J5107
C5010 47:400
C5021 2200P:500B 500V
D5012 1. 5KE150A
C5012 3300P:500B
R5010 390K:1/4J-D
R5011 390K:1/4J-D
D5010 AP01
L5010 B.C.
C5020 47P:1kSL
R5004 330K:1/10J
R5002 180:1/10J
Q5001 2SK1460
DRIVE
Q5002 2SC2274F.KF
R5005 0:1/10Z
C5015 0. 1:B
DRIVE
Q5003 2SA984F.KF
SW
R5006 10K:1/10J
CONTROL
Q5004 2SC2274F.KF
C5017 390P:CH
R5007 22K:1/10J
R5009 68K:1/10J
L5011 B.C.
D5013 PC123U
D5004 1SS244
D5006 1SS244
C5011 4. 7:50 (YXF) (PJ)
R5003 1. 8K:1/10J
D5003 1SS244
T5001
PR511 F20
D5105 SFT14
R5121 2. 7:1/4J-D
C5107 220:6. 3 (YXF) (PJ)
R5110 27
D5103 1SS244
C5123 100P:500B
C5105 47:50 (YXF) (PJ)
C5106 47:35 (YXF) (PJ)
R5104 3. 3K:1/4J-D
D5109 MTZJ5. 6C
R5120 8. 2
D5104 1SS244
D5102
PR512 4911. 25
J5150 5
R5105 220:1/4J-D
Q5101 2SC4483S. T 2SD1858Q. R
Q5104 REG&SW 2SC4483S. T 2SD1858Q. R
Q5105 REG&SW 2SC4640 2SC1740
Q5102 REG 2SC4483S. T 2SD1858Q. R
D5107 MTZJ5. 6C
C5117 3. 3:50
R5106 470:1/4J-D
C5113 10:16
D5108 MTZJ5. 6C
C5114 10:16
C5112 10:16
C5118 10:16
L5109 B.C. SF24
L5102 B.C.
R5112 3. 9K:1/10J
L5101 B.C.
D5101 RL2Z SF34 ERB93-02 ~~ER302~~
C5101 1000:16 (PJ)
C5102 1000:6. 3
C5124 0. 22:50
R5114 47:1/10J
C5103 470:16 (PJ)
C5104 1000:16
D5111 MTZJ6. 2C
R5123 1. 8K:1/4J-D
R5101 330:1/4J-D
D5013 PC123U2
C5135 0. 1:K-F
R5135 120:1/10J
IC511 UPC1093J REG.
R5102 390:1/10J
R5111 510:1/4J-D
R5103 560:1/4J-D
D5112 DSK10C ERA15-02
D5113 DSK10C ERA15-02
Q5132 DTA114EK SW
R5134 3. 3K:1/4J-D
Q5133 DTC114EK INV.
Q5131 REG 2SC4640 2SC1740
Q5134 REG&SW 2SC4483S. T 2SD1858Q. R
R5133 8. 2K:1/4J-D
R5132 3. 3K:1/4J-D
R5109 3. 3K:1/4J-D
R5108 1. 8K:1/10J
C5115 3. 3:50
D5110 MTZJ12B
Q5103 REG 2SC2274E. F. KE. KF
C5116 10:16
J5131 5
C5111 100:16
HEATER +
HEATER -
ALWAYS 37V
SWD 5V(SV)
SWD 5V
SWD 5V(AD)
ALWAYS 5V
ALWAYS 13V (MC)
ALWAYS -23V
ALWAYS 13V
ALWAYS 5. 8V
SWD 9V
GND(MC. ML)
ALWAYS 12V
GND (S)
GND(MH)
POWER CTL

CP-1 BOARD (PW-A) POWER SUPPLY (VHR-778G & VHR-788G)


PW-A
P1-17301/AP4HN-G3
CN501
F5001 T2.5AH250V
R5001 2.7M 1/2W
C5001 0.068UF AC250V AC275V
L5001 33mH
C5002 0.068UF AC250V AC275V
D5001 DB155G S1WB(A)60 DI156S
C5007 1000P AC250V
C5010 47:400
C5012 330P:1kH
C5005 1000P AC250V
R5003 560K:1/4J-D
R5002 560K:1/4J-D
D5002 DSK10E
C5013 1000P:1kH
SWITCHING REG
IC501 MA3810
Q1
Q2
D3
C1
D5
D4
C2
DELAY
SW.
Q5002 2SC4483T
R5012 100:2J-S
D5012 SFT14 1E3
R5013 1K:1/10J
D5016 MTZJ2.0A
R5016 680:1/10J
R5014 1K:1/10J
D5019 1SS244
R5015 1.2K:1/10J
C5016 0.1:B
C5014 0.1:B
C5015 0.01:B
D5015 1SS244
R5010 3.3:1J-S
R5011 18:1/4J-D
D5011 SFT14 1E3
D5014 1SS244
R5017 2.7K:1/10J
D5013 PC123U
T5001
D5105 D1FL20U SC321-2
PR511 F25
C5107 220:6.3 (YXF) (PJ)
Q5110 DTB113ZK SW.
R5121 3.9:1/4J-D
SW. Q5111 DTA144EK
D5103 1SS244
R5110
C5105 47:50 (PJ, YXF)
Q5112 DTC124EK
R5119 47K:1/10J
C5122 0.1:B
Q5115 DTC144EK SW.
DRIVE
C5123 0.1:B
C5106 47:35 (YXF) (PJ)
R5104 10K:1/4J-D
D5115 1SS244
D5109 MTZJ5.6B
R5120
D5104 SFT14 1E3
R5122
SW. 0
Q5117 DTC123JKA
REG
Q5113 DTC114EK
D5116 RD24MB
R5124 0
PR512
4911.25
SW. &REG
Q5101 2SC4483S,T 2SD1858Q,R
Q5104 2SC5070
Q5105 2SC4640 2SC1740
Q5102 2SC4483S,T 2SD1858Q,R
R5106 470:1/4J-D
C5113 10:16
D5108 MTZJ5.6B
C5114 0.1:B
J5105
D5107 MTZJ5.6B
C5117 3.3:50
C5112 10:16
C5118 10:16
R5105 220:1/4J-D
R5125 0
PR510 F25
D5102 D2FS6 SS26 SS36
D5106 1SS244
L5102
D5101 ERC81004 RK44 1N5822
L5101 10U
C5103 470:16 (PJ)
C5104 1000:16 (YXF) B.C. (PJ)
C5101 1000:16 (PJ)
C5108 4.7:50 (PJ)
R5117 120:1/10J
R5118 120:1/10J
D5111 MTZJ6.8A
R5101 390:1/10J
D5013
R5123 820:1/10J
C5135 0.1:F
R5135 120:1/10J
IC511 UPC1093J
R5102 150:1/10J
R5111 560:1/10J
R5103 560:1/10J
C5102 1000:6.3 (105)
Q5116 DTC124EK SW.
R5115 2.7K:1/10J
R5116 2.7K:1/10J
Q5114 2SC5070
C5119 0.1:B
C5120 0.1:B
D5112 EPA38-04
J5109
Q5131 2SC5070
SW.
R5134 1.5K:1/4J-D
Q5134 2SC2412R,S
R5131 1.5K:1/4J-D
Q5132 DTA144EK
Q5133 DTC114EK DRIVE
R5132 3.6K:1/10J
R5133 8.2K:1/10J
R5109 3.3K:1/10J
R5108 1.8K:1/10J
C5115 3.3:50
D5110 MTZJ12A
Q5103 2SC2274E,F,KE,KF
C5116 10:16
C5111 100:16
SW. REG
HEATER +
HEATER -
POWER SAVE
SWD(PS) 37V
SWD 5V(SV)
SWD 5V
SWD 5V(AD)
SWD(PS) 5V
GND(MH)
SWD(PS) -23V
SWD(PS) 13V(MC)
SWD(PS) 13V
ALWAYS 5.8V(LED)
ALWAYS 5.8V
SWD 9V
GND(MC.ML)
SWD(PS) 12V
GND(S)
POWER CTL
K
J
I
H
G
F
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C
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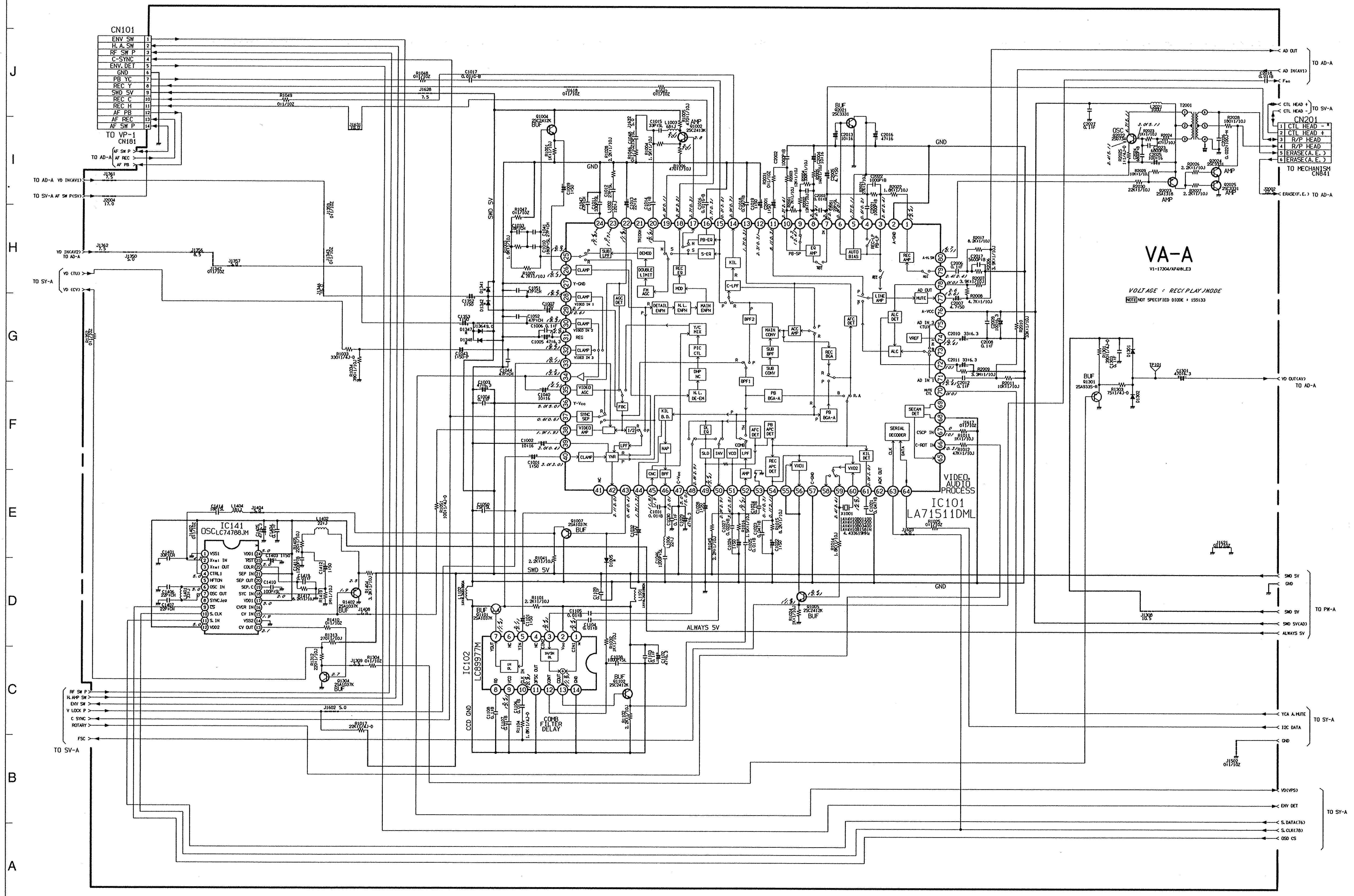
CP-1 BOARD (VA-A) VIDEO & AUDIO


CN101
ENV SW
H.A. SW
RF SW P
C-SYNC
ENV. DET
GND
PB YC
REC Y
SWD 5V
REC C
REC H
AF PB
AF REC
AF SW P
TO VP-1
CN181
TO AD-A
TO SY-A
BUF
AMP
OSC
GND
CN201
CTL HEAD -
CTL HEAD +
R/P HEAD
R/P HEAD
ERASE(A.E.)
ERASE(A.E.)
TO MECHANISM
CN841
VA-A
VIDEO AUDIO PROCESS
IC101
LA71511DML
IC141
OSCLC74788JM
IC102
LC89977M
COMB FILTER DELAY
CCD GND
ALWAYS 5V
SWD 5V
TO PW-A
K
J
I
H
G
F
E
D
C
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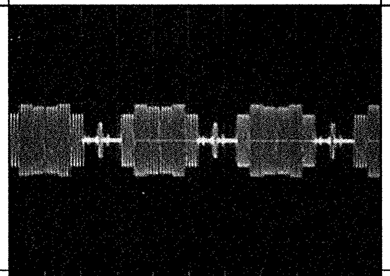
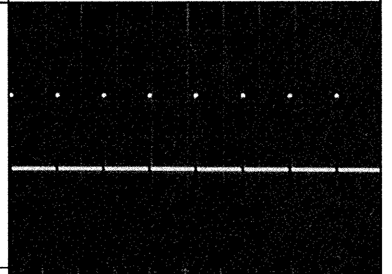
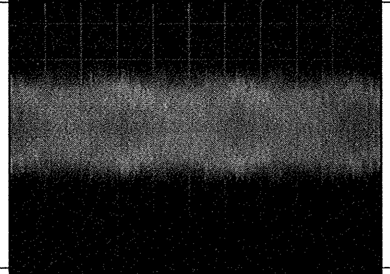
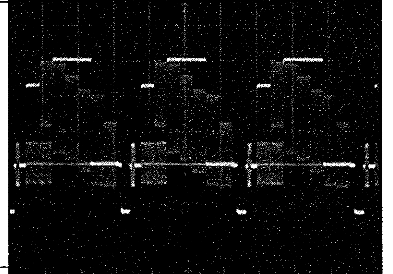
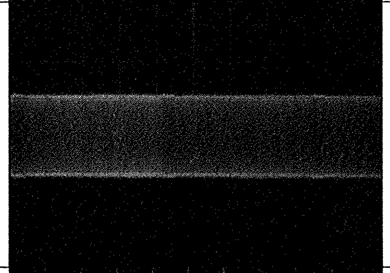
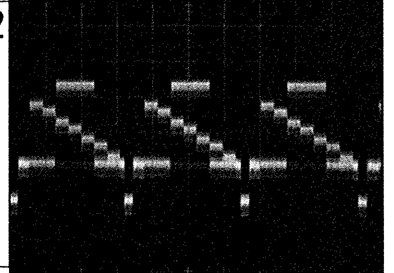
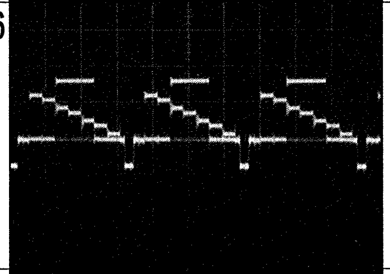
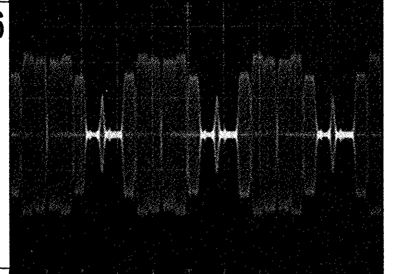
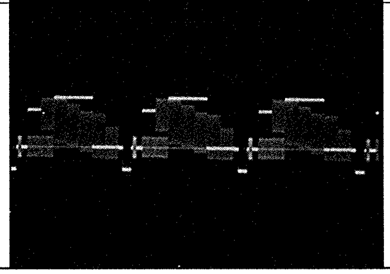
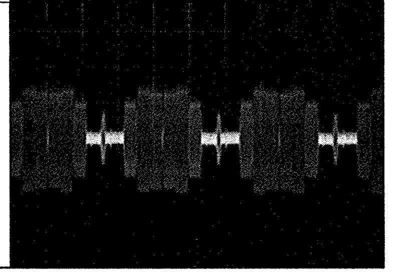
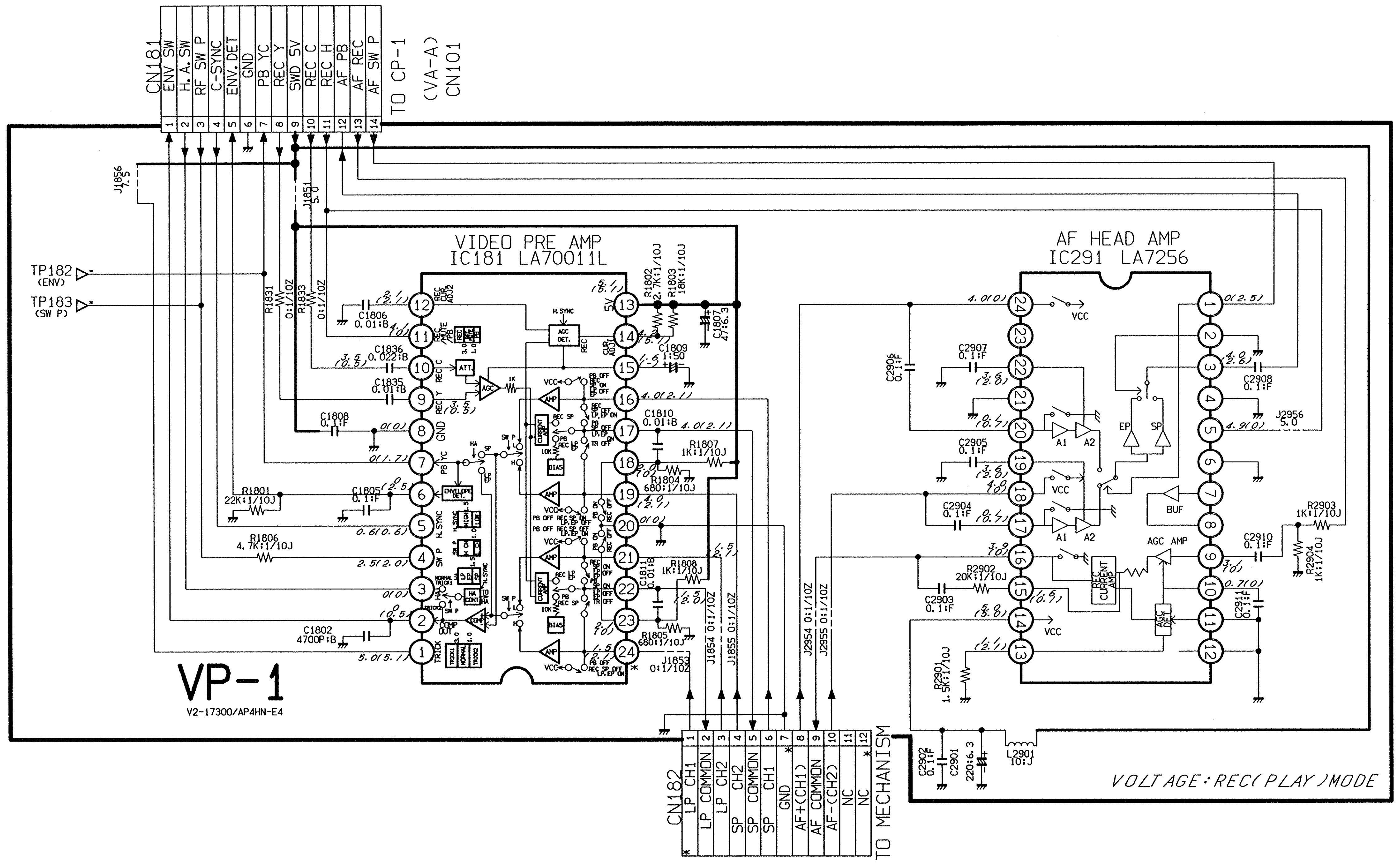
VIDEO CIRCUIT WAVEFORMS

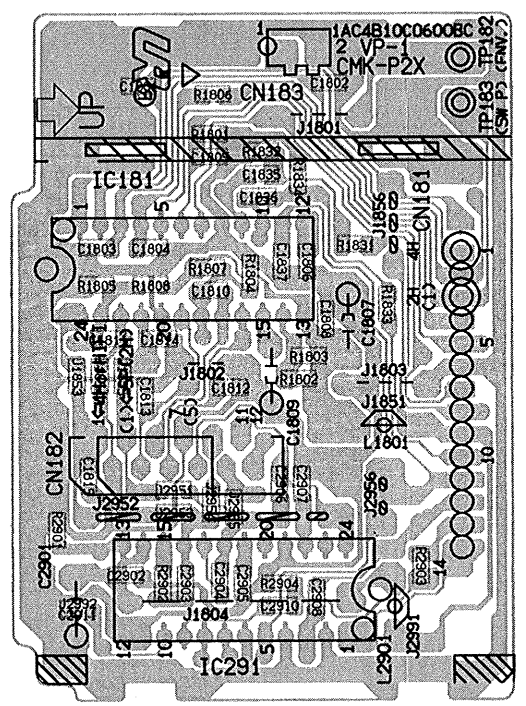
TEST LOCATION	WAVE FORM	TEST LOCATION	WAVE FORM
IC101 PIN14 REC 0. 4Vp-p (REC C)		IC101 PIN37 REC, PLAY 4Vp-p (C SYNC)	
IC101 PIN15 PLAY 0. 25Vp-p (PB Y, C)		IC101 PIN38 REC, PLAY 2Vp-p (VIDEO OUT)	
IC101 PIN18 REC 0. 2Vp-p (REC Y)		IC101 PIN40, 42 REC, PLAY 0. 35Vp-p	
IC101 PIN25, 26 REC, PLAY 0. 5Vp-p		IC101 PIN45, 46 PLAY 0. 4Vp-p	
IC101 PIN28 REC 1Vp-p (VIDEO IN)		IC101 PIN48, 50, 52 REC, PLAY 0. 25Vp-p	

WF-V-PG2ZK

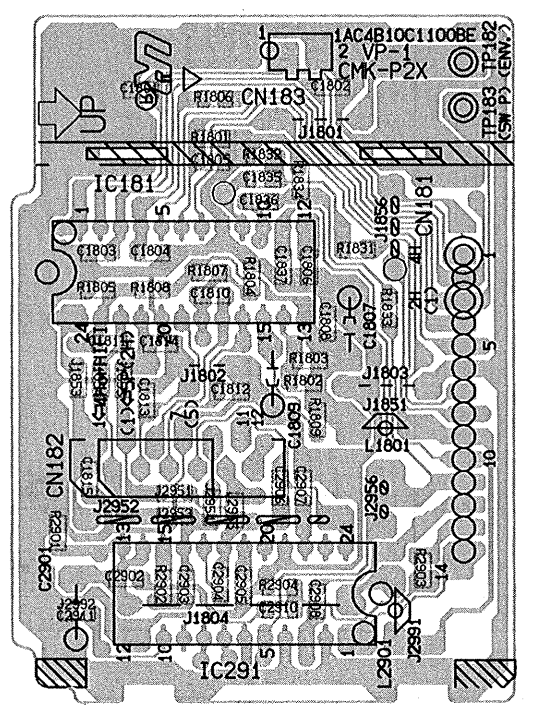
VP-1 BOARD VIDEO PRE-AMP & AUDIO PRE-AMP


CN181
ENV SW
H.A.SW
RF SW P
C-SYNC
ENV.DET
GND
PB YC
REC Y
SWD 5V
REC C
REC H
AF PB
AF REC
AF SW P
TO CP-1 (VA-A) CN101
J1856
J1851
TP182 (ENV)
TP183 (SW P)
VIDEO PRE AMP
IC181 LA70011L
AF HEAD AMP
IC291 LA7256
R1801 22K±1/10J
R1806 4.7K±1/10J
C1802 4700P±B
C1805 0.1±F
C1806 0.01±B
C1836 0.022±B
C1835 0.01±B
C1808 0.1±F
R1831
R1833
R1802 2.7K±1/10J
R1803 18K±1/10J
C1807
C1809
C1810 0.01±B
R1807 1K±1/10J
R1804 680±1/10J
R1808 1K±1/10J
R1805 680±1/10J
C1811 0.01±B
J1853 0±1/10Z
J1854 0±1/10Z
J1855 0±1/10Z
J2954 0±1/10Z
J2955 0±1/10Z
C2906 0.1±F
C2907 0.1±F
C2905 0.1±F
C2904 0.1±F
C2903 0.1±F
R2902 20K±1/10J
R2901 1.5K±1/10J
C2902 0.1±F
C2901 220 16.3
L2901 10±J
C2908 0.1±F
J2956 5.0
R2903 1K±1/10J
R2904 1K±1/10J
C2910 0.1±F
C2911 0.1±F
VCC
A1
A2
EP
SP
BUF
AGC AMP
VP-1
V2-17300/AP4HN-E4
CN182
LP CH1
LP COMMON
LP CH2
SP CH2
SP COMMON
SP CH1
GND
AF+(CH1)
AF COMMON
AF-(CH2)
NC
NC
TO MECHANISM
VOLTAGE: REC(PLAY)MODE

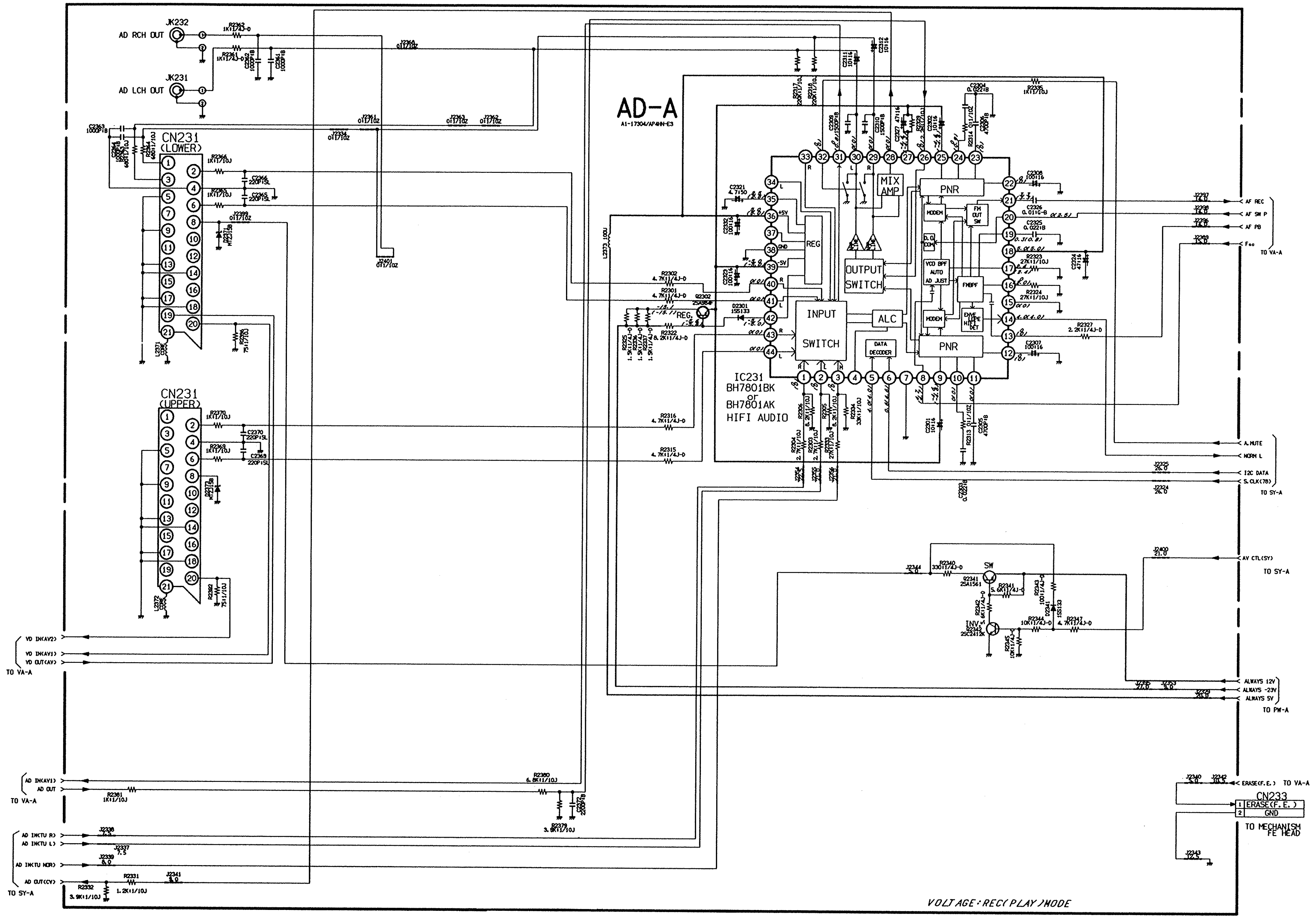
VP-1 P.W.B. (VHR-778E ONLY)


1AC4B10C0600BC
VP-1
CMK-P2X
CN183
IC181
CN181
CN182
IC291
UP

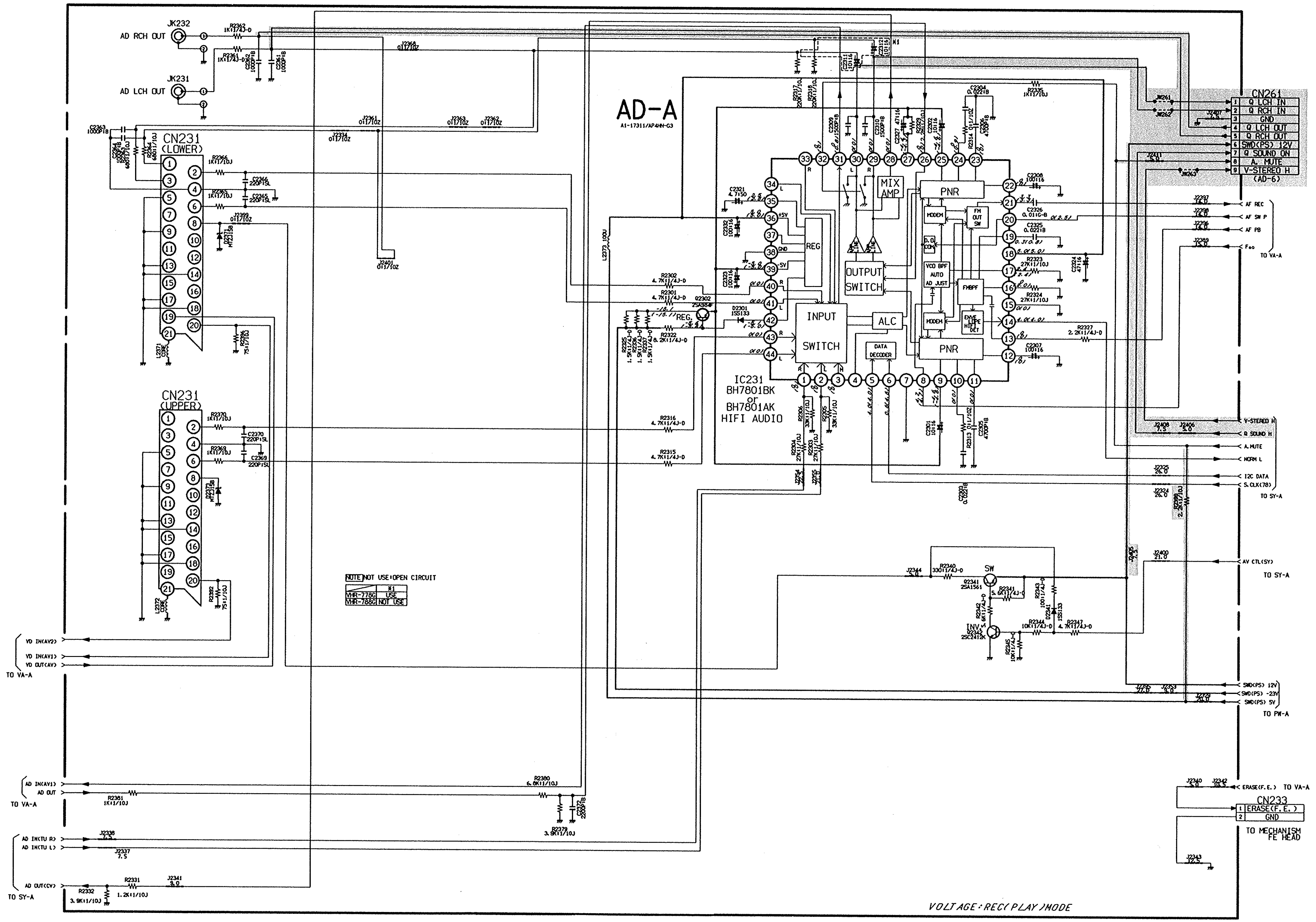
VP-1 P.W.B. (VHR-778G & VHR-788G)


1AC4B10C1100BE
VP-1
CMK-P2X
CN183
IC181
CN182
IC291
UP

CP-1 BOARD (AD-A) HiFi AUDIO (VHR-778E ONLY)


AD-A
JK232
AD RCH OUT
JK231
AD LCH OUT
CN231 (LOWER)
CN231 (UPPER)
IC231
BH7801BK
or
BH7801AK
HiFi AUDIO
INPUT SWITCH
OUTPUT SWITCH
MIX AMP
PNR
ALC
REG
DATA DECODER
TO VA-A
TO SY-A
TO PW-A
CN233
ERASE(F.E.)
GND
TO MECHANISM FE HEAD
VOLTAGE:REC(PLAY)MODE

CP-1 BOARD (AD-A) HiFi AUDIO (VHR-778G & VHR-788G)

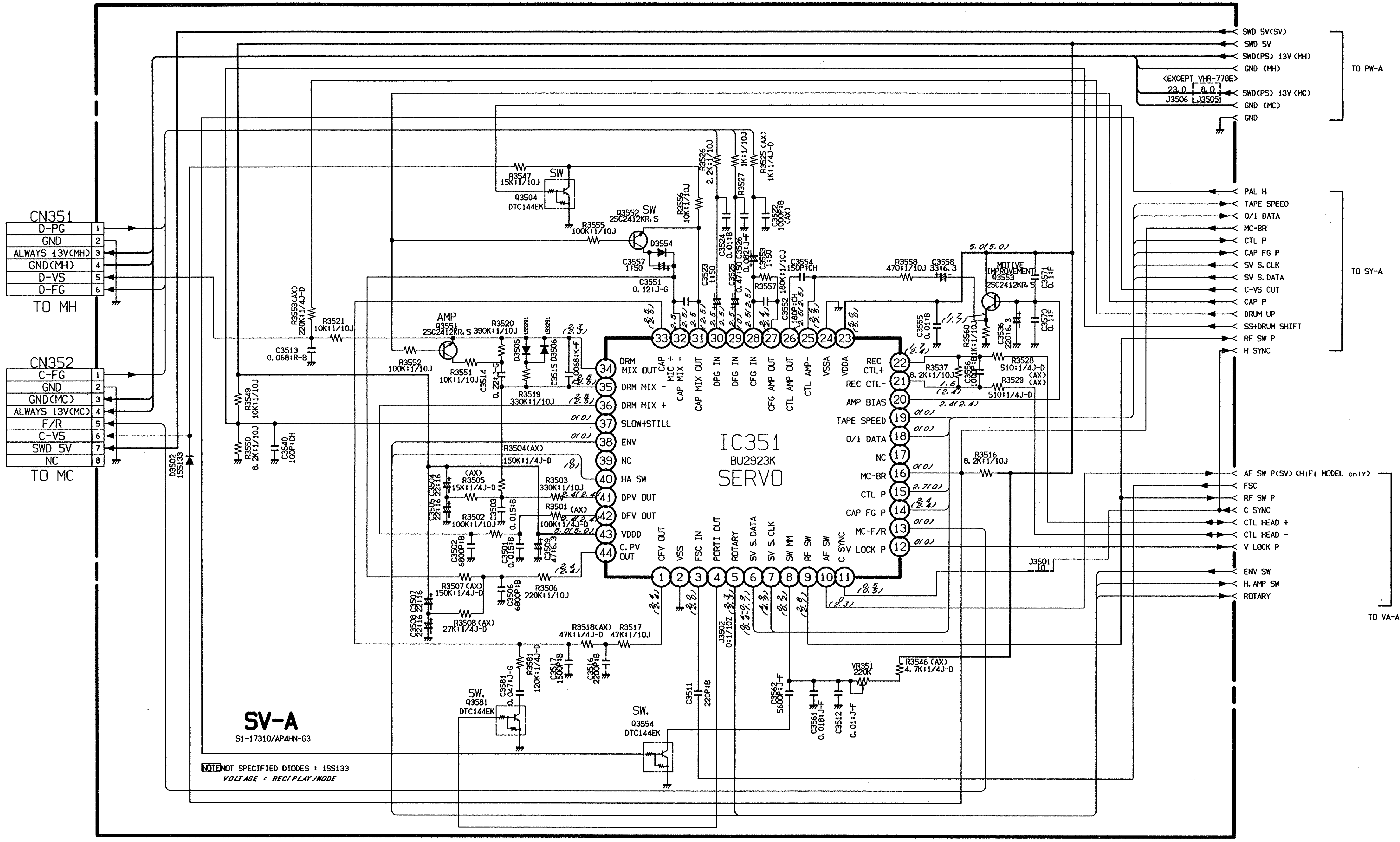

AD-A
JK232
AD RCH OUT
JK231
AD LCH OUT
CN231 (LOWER)
CN231 (UPPER)
CN261
Q LCH IN
Q RCH IN
GND
SW L.CH OUT
Q RCH OUT
SWD(PS) 12V
Q SOUND ON
A. MUTE
V-STEREO H
(AD-6)
IC231
BH7801BK
or
BH7801AK
HiFi AUDIO
INPUT SWITCH
OUTPUT SWITCH
MIX AMP
PNR
ALC
REG
DATA DECODER
TO VA-A
TO SY-A
TO PW-A
CN233
ERASE(F.E.)
GND
TO MECHANISM FE HEAD
VOLTAGE:REC(PLAY)MODE

NOTES:

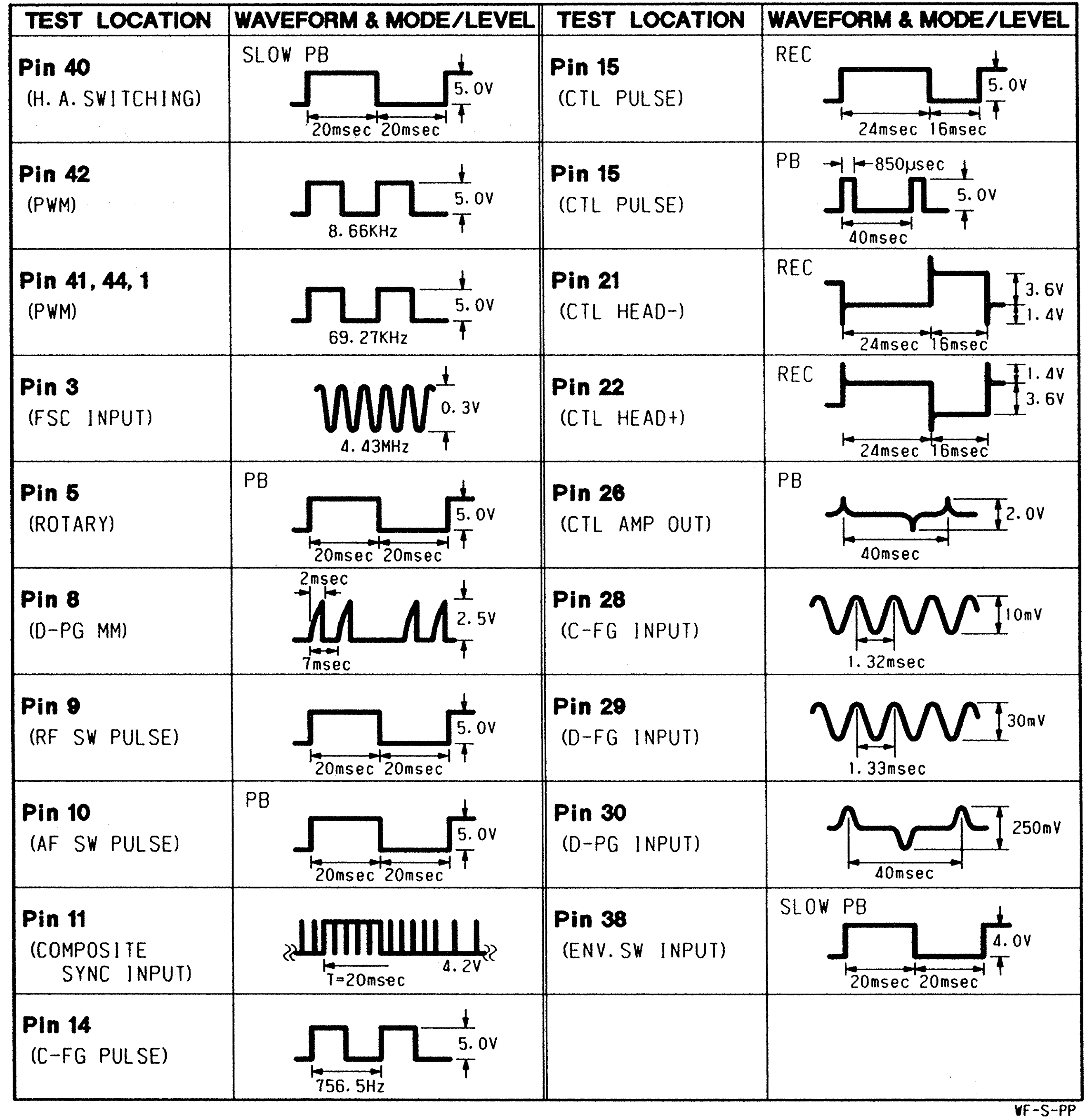
——: Common parts for VHR-778G & VHR-788G.

The parts marked ▨ are VHR-788G ONLY.

CP-1 BOARD (SV-A) SERVO


CN351
D-PG
GND
ALWAYS 13V(MH)
GND(MH)
D-VS
D-FG
TO MH
CN352
C-FG
GND
GND(MC)
ALWAYS 13V(MC)
F/R
C-VS
SWD 5V
NC
TO MC
IC351
BU2923K
SERVO
DRM MIX OUT
DRM MIX -
DRM MIX +
SLOW+STILL
ENV
NC
HA SW
DPV OUT
DFV OUT
VDDD
C.PV OUT
CFV OUT
VSS
FSC IN
PORTI OUT
ROTARY
SV S.DATA
SV S.CLK
SW MM
RF SW
AF SW
C SYNC
V LOCK P
MC-F/R
CAP FG P
CTL P
MC-BR
O/I DATA
TAPE SPEED
AMP BIAS
REC CTL-
REC CTL+
VDDA
VSSA
CTL AMP-
CTL AMP OUT
CFG AMP OUT
CFG IN
DFG IN
DPG IN
CAP MIX OUT
CAP MIX -
CAP MIX +
AMP
SW
SW.
Q3504 DTC144EK
Q3552 2SC2412KR, S
Q3551 2SC2412KR, S
Q3553 2SC2412KR, S
Q3581 DTC144EK
Q3554 DTC144EK
MOTIVE IMPROVEMENT
VR351 220K
SWD 5V(SV)
SWD 5V
SWD(PS) 13V(MH)
GND (MH)
<EXCEPT VHR-778E>
23.0
8.0
J3506
J3505
SWD(PS) 13V(MC)
GND (MC)
GND
TO PW-A
PAL H
TAPE SPEED
O/1 DATA
MC-BR
CTL P
CAP FG P
SV S.CLK
SV S.DATA
C-VS CUT
CAP P
DRUM UP
SS+DRUM SHIFT
RF SW P
H SYNC
TO SY-A
AF SW P(SV) (HiFi MODEL only)
FSC
RF SW P
C SYNC
CTL HEAD +
CTL HEAD -
V LOCK P
ENV SW
H.AMP SW
ROTARY
TO VA-A
SV-A
S1-17310/AP4HN-G3
NOTE NOT SPECIFIED DIODES : 1SS133
VOLTAGE : REC(PLAY)MODE

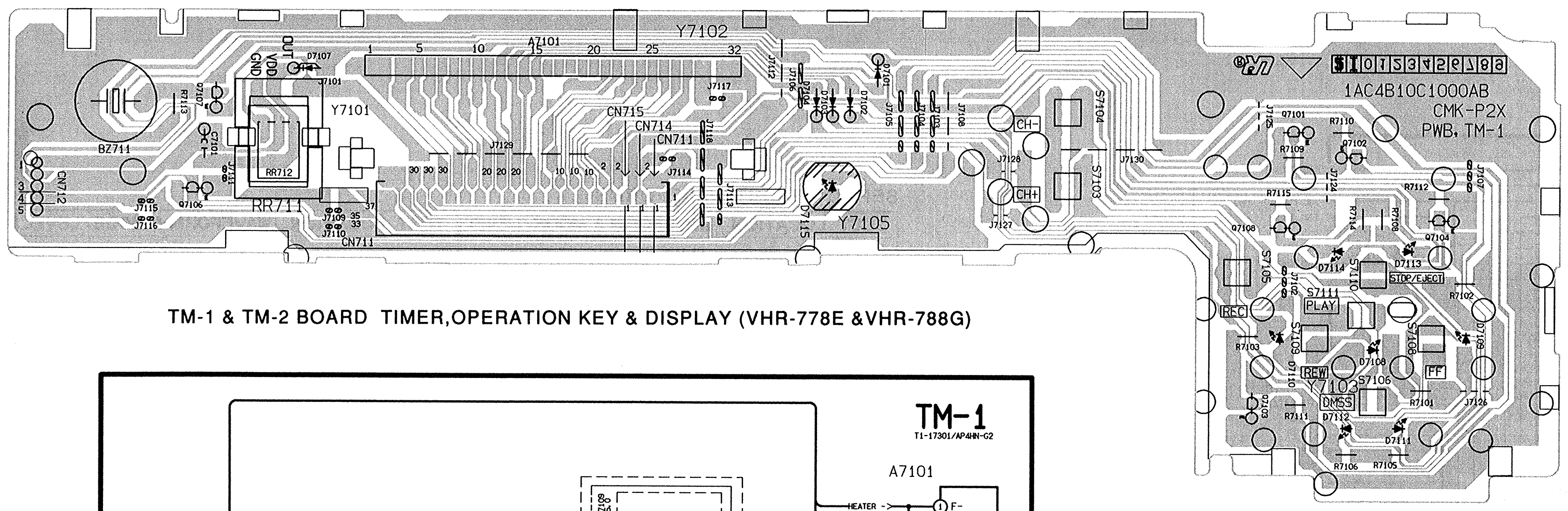
SERVO CIRCUIT WAVEFORMS



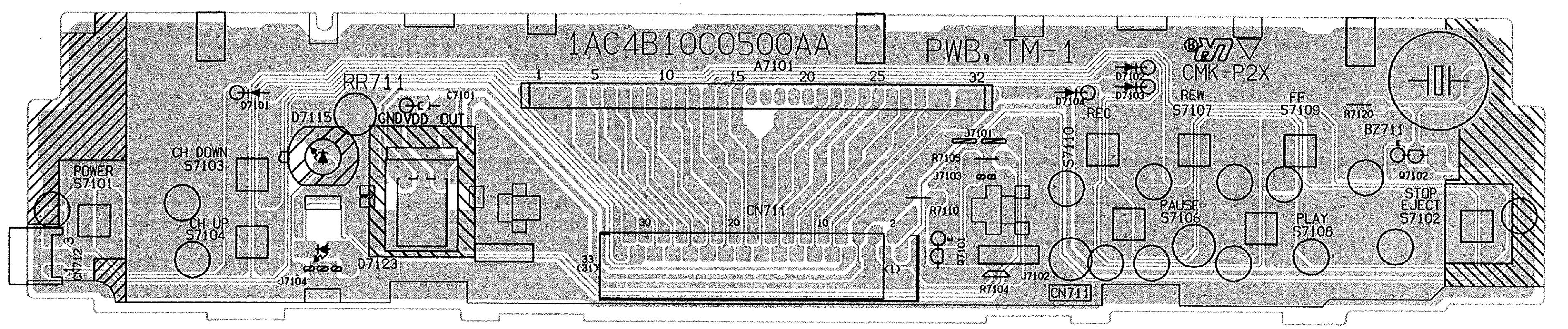
TEST LOCATION	WAVEFORM & MODE/LEVEL	TEST LOCATION	WAVEFORM & MODE/LEVEL
Pin 40 (H. A. SWITCHING)	SLOW PB 5.0V 20msec 20msec	**Pin 15** (CTL PULSE)	REC 5.0V 24msec 16msec
Pin 42 (PWM)	5.0V 8.66KHz	**Pin 15** (CTL PULSE)	PB 850μsec 5.0V 40msec
Pin 41, 44, 1 (PWM)	5.0V 69.27KHz	**Pin 21** (CTL HEAD-)	REC 3.6V 1.4V 24msec 16msec
Pin 3 (FSC INPUT)	0.3V 4.43MHz	**Pin 22** (CTL HEAD+)	REC 1.4V 3.6V 24msec 16msec
Pin 5 (ROTARY)	PB 5.0V 20msec 20msec	**Pin 26** (CTL AMP OUT)	PB 2.0V 40msec
Pin 8 (D-PG MM)	2msec 2.5V 7msec	**Pin 28** (C-FG INPUT)	10mV 1.32msec
Pin 9 (RF SW PULSE)	5.0V 20msec 20msec	**Pin 29** (D-FG INPUT)	30mV 1.33msec
Pin 10 (AF SW PULSE)	PB 5.0V 20msec 20msec	**Pin 30** (D-PG INPUT)	250mV 40msec
Pin 11 (COMPOSITE SYNC INPUT)	T=20msec 4.2V	**Pin 38** (ENV. SW INPUT)	SLOW PB 4.0V 20msec 20msec
Pin 14 (C-FG PULSE)	5.0V 756.5Hz		

WF-S-PP

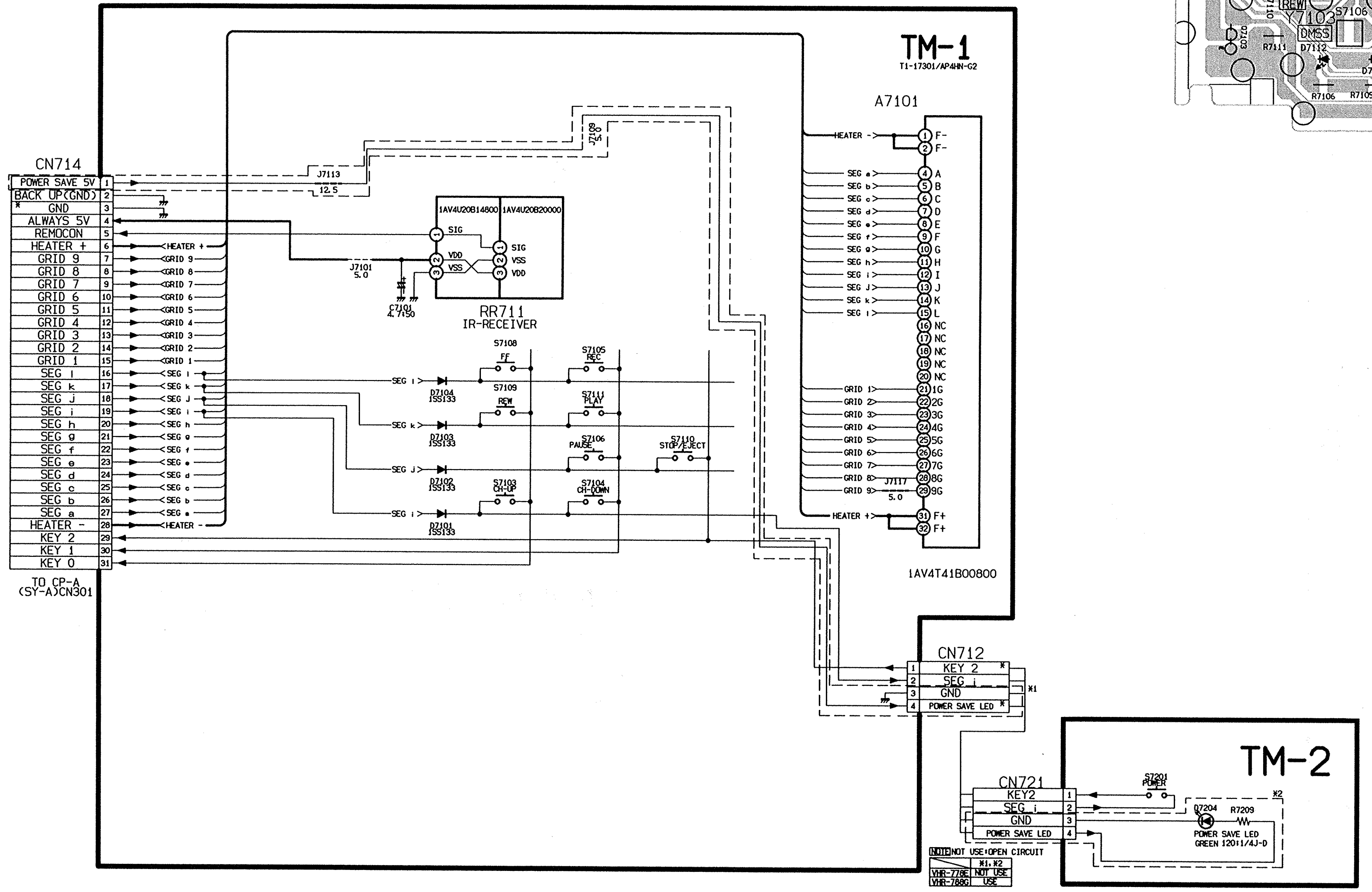
TM-1 P.W.B. (VHR-778E &VHR-788G)


A7101
Y7102
Y7101
RR711
BZ711
CN712
CN714
CN715
CN711
Y7105
1AC4B10C1000AB
CMK-P2X
PWB, TM-1
CH-
CH+
S7104
S7103
S7105
S7111
PLAY
S7113
STOP/EJECT
REC
REW
FF
DMSS
S7109
S7106
S7112

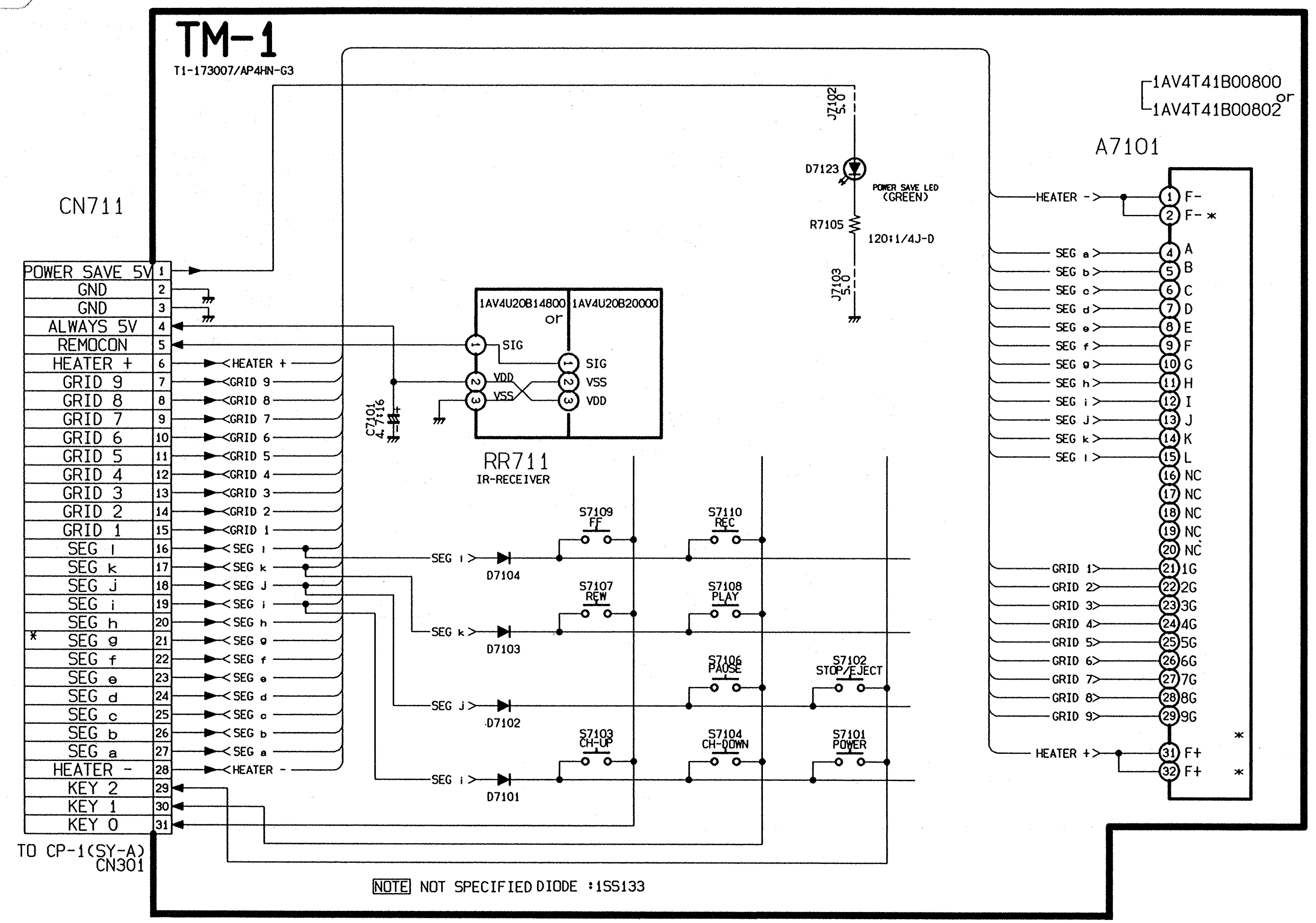
TM-1 P.W.B. (VHR-778G ONLY)


1AC4B10C0500AA
PWB, TM-1
CMK-P2X
A7101
RR711
POWER
S7101
CH DOWN
S7103
CH UP
S7104
D7123
CN711
REC
S7110
REW
S7107
FF
S7109
BZ711
PAUSE
S7106
PLAY
S7108
STOP
EJECT
S7102
CN712

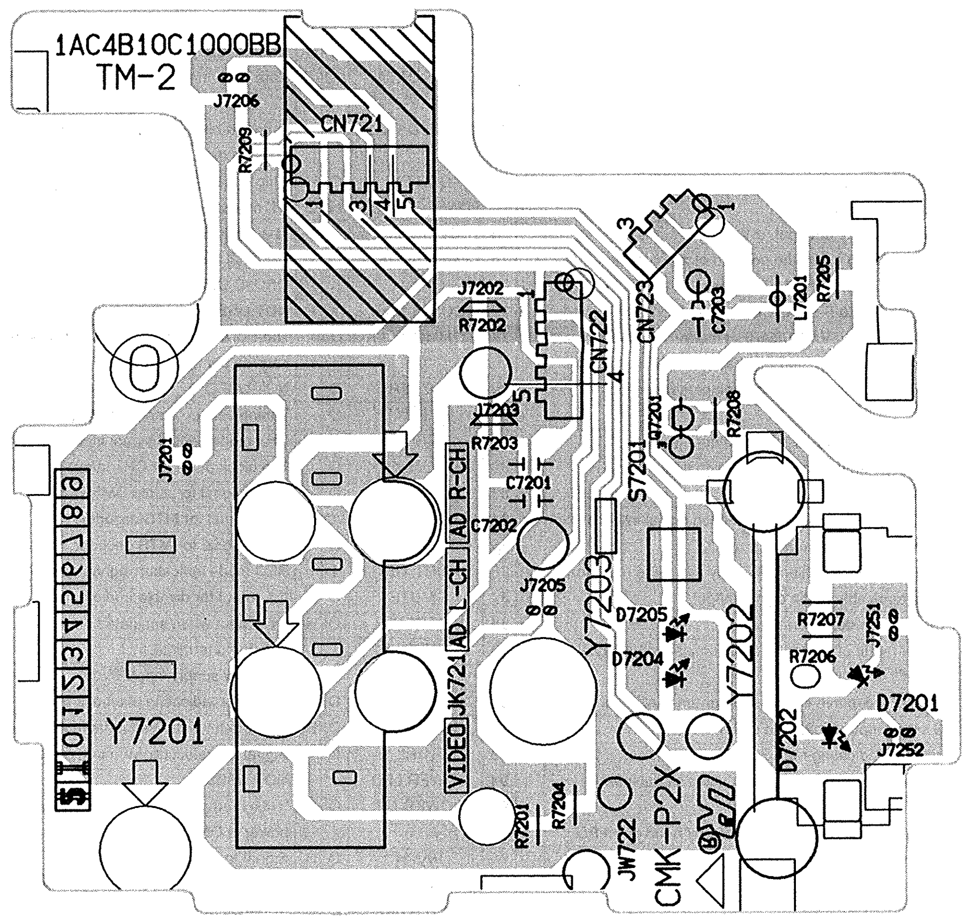
TM-1 & TM-2 BOARD TIMER,OPERATION KEY & DISPLAY (VHR-778E &VHR-788G)


TM-1
T1-17301/AP4HN-G2
A7101
1AV4T41B00800
CN714
POWER SAVE 5V
BACK UP(GND)
GND
ALWAYS 5V
REMOCON
HEATER +
GRID 9
GRID 8
GRID 7
GRID 6
GRID 5
GRID 4
GRID 3
GRID 2
GRID 1
SEG l
SEG k
SEG J
SEG i
SEG h
SEG g
SEG f
SEG e
SEG d
SEG c
SEG b
SEG a
HEATER -
KEY 2
KEY 1
KEY 0
TO CP-A
(SY-A)CN301
RR711
IR-RECEIVER
1AV4U20B14800
1AV4U20B20000
SIG
VDD
VSS
J7101
J7113
S7108
FF
S7105
REC
S7109
REW
S7111
PLAY
S7106
PAUSE
S7110
STOP/EJECT
S7103
CH-UP
S7104
CH-DOWN
D7104
D7103
D7102
D7101
1SS133
CN712
KEY 2
SEG l
GND
POWER SAVE LED
CN721
KEY2
SEG l
GND
POWER SAVE LED
TM-2
S7201
POWER
D7204
R7209
POWER SAVE LED
GREEN 1201/4J-D
NOTE NOT USE:OPEN CIRCUIT
VHR-778E NOT USE
VHR-788G USE

TM-1 BOARD TIMER,OPERATION KEY & DISPLAY (VHR-778G ONLY)

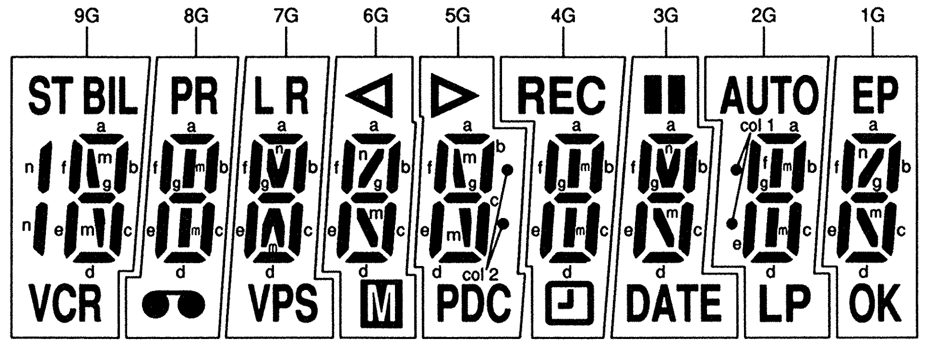

TM-1
T1-173007/AP4HN-G3
1AV4T41B00800
or
1AV4T41B00802
A7101
CN711
POWER SAVE 5V
GND
GND
ALWAYS 5V
REMOCON
HEATER +
GRID 9
GRID 8
GRID 7
GRID 6
GRID 5
GRID 4
GRID 3
GRID 2
GRID 1
SEG l
SEG k
SEG J
SEG i
SEG h
SEG g
SEG f
SEG e
SEG d
SEG c
SEG b
SEG a
HEATER -
KEY 2
KEY 1
KEY 0
TO CP-1(SY-A)
CN301
1AV4U20B14800
or
1AV4U20B20000
SIG
VDD
VSS
RR711
IR-RECEIVER
D7123
POWER SAVE LED
(GREEN)
R7105
1201/4J-D
J7102
J7103
S7109
FF
S7110
REC
S7107
REW
S7108
PLAY
S7106
PAUSE
S7102
STOP/EJECT
S7103
CH-UP
S7104
CH-DOWN
S7101
POWER
D7104
D7103
D7102
D7101
NOTE NOT SPECIFIED DIODE :1SS133

TM-2 P.W.B. (VHR-778E & VHR-788G)


1AC4B10C1000BB
TM-2
CN721
J7206
R7209
J7202
R7202
CN722
CN723
J7203
R7203
C7201
C7202
J7201
S7201
R7208
C7203
L7201
R7205
J7205
Y7203
Y7202
D7205
D7204
R7207
R7206
D7201
D7202
J7252
J7251
Y7201
VIDEO JK721 AD L-CH AD R-CH
R7204
R7201
JW722
CMK-P2X

A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE

GRID & SEGMENT ASSIGNMENT

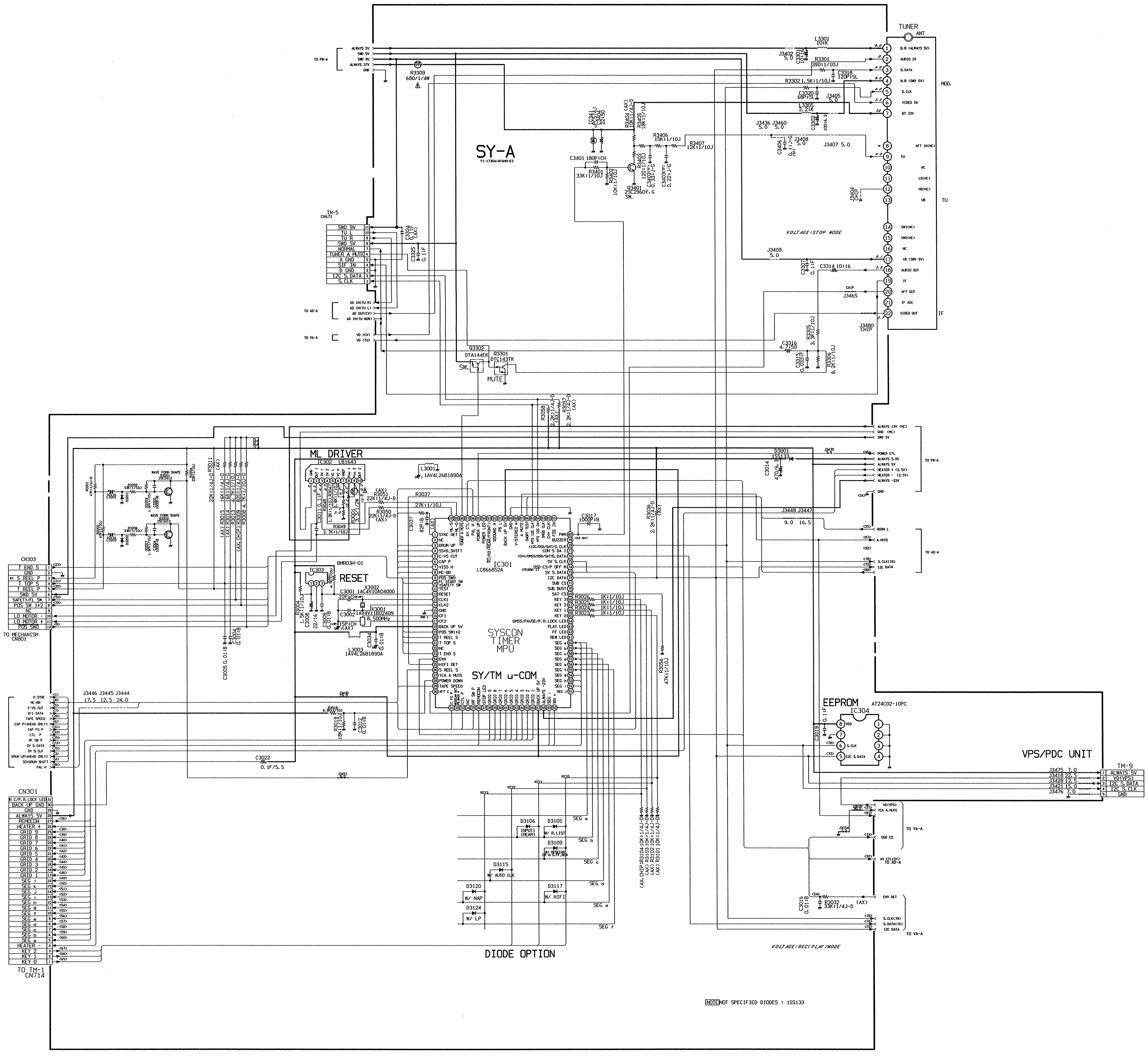

9G
8G
7G
6G
5G
4G
3G
2G
1G
ST BIL
PR
L R
◁
▷
REC
▮▮
AUTO
EP
col 1
col 2
VCR
VPS
M
PDC
DATE
LP
OK

ANODE CONNECTION

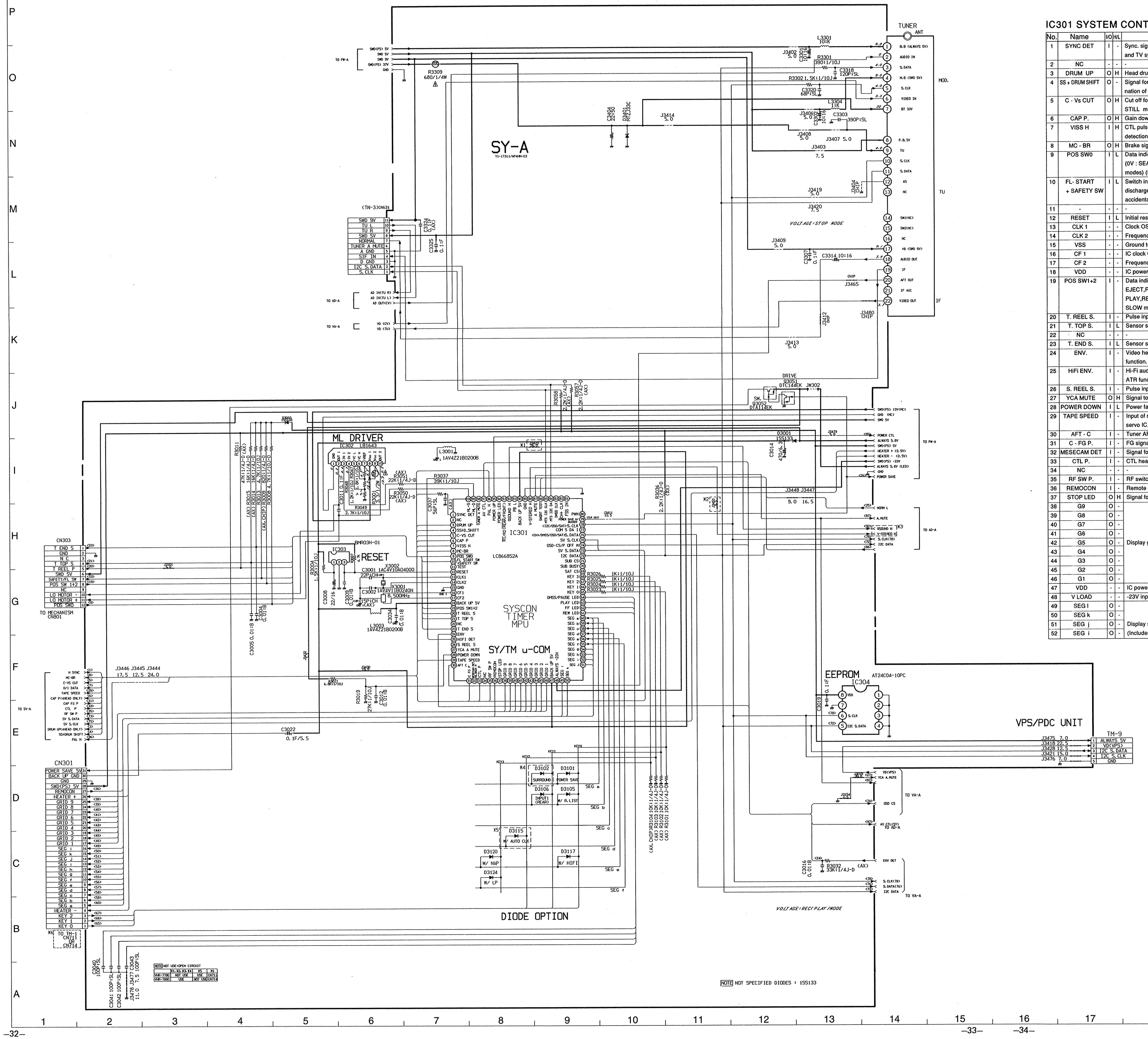
GRID / SEGMENT	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	ST	PR	L	◁	▷	REC	▮▮	AUTO	EP
b	n	—	n	n	—	—	n	—	n
c	a	a	a	a	a	a	a	a	a
d	b	b	b	b	b	b	b	b	b
e	c	c	c	c	c	c	c	c	c
f	d	d	d	d	d	d	d	d	d
g	e	e	e	e	e	e	e	e	e
h	f	f	f	f	f	f	f	f	f
i	g	g	g	g	g	g	g	g	g
j	m	m	m	m	m	m	m	m	m
k	BIL	—	VPS	—	col 2	—	—	col 1	—
l	VCR	●●	R	M	PDC	⏎	DATE	LP	OK

GR-00800

CP-1 BOARD (SY-A) SYSTEM CONTROL,TIMER & TUNER (VHR-778E ONLY)


TUNER
ANT
MOD.
TU
IF
SY-A
TO PW-A
TN-5
CN671
TO AD-A
TO VA-A
Q3302
DTA144EK
Q3301
DTC143TK
SW.
MUTE
Q3401
2SC2960F.G
SW.
VOLTAGE:STOP MODE
ML DRIVER
IC302 LB1643
L3001
1AV4L26B1890A
RESET
IC303
BMR03H-01
X3002
C3001 1AC4V10Q04000
X3001
8.500MHz
L3003
1AV4L26B1890A
IC301
LC866852A
SYSCON
TIMER
MPU
SY/TM u-COM
CN303
TO MECHANISM
CN801
TO SV-A
CN301
TO TM-1
CN714
EEPROM
IC304
AT24C02-10PC
VPS/PDC UNIT
TM-9
ALWAYS 5V
VD(VPS)
I2C S.DATA
I2C S.CLK
GND
DIODE OPTION
D3106
D3105
D3109
D3115
D3120
D3117
D3124
VOLTAGE:REC(PLAY)MODE
NOTE NOT SPECIFIED DIODES : 1SS133
D3001
1SS133
TO YA-A

CP-1 BOARD (SY-A) SYSTEM CONTROL,TIMER & TUNER (VHR-778G & VHR-788G)

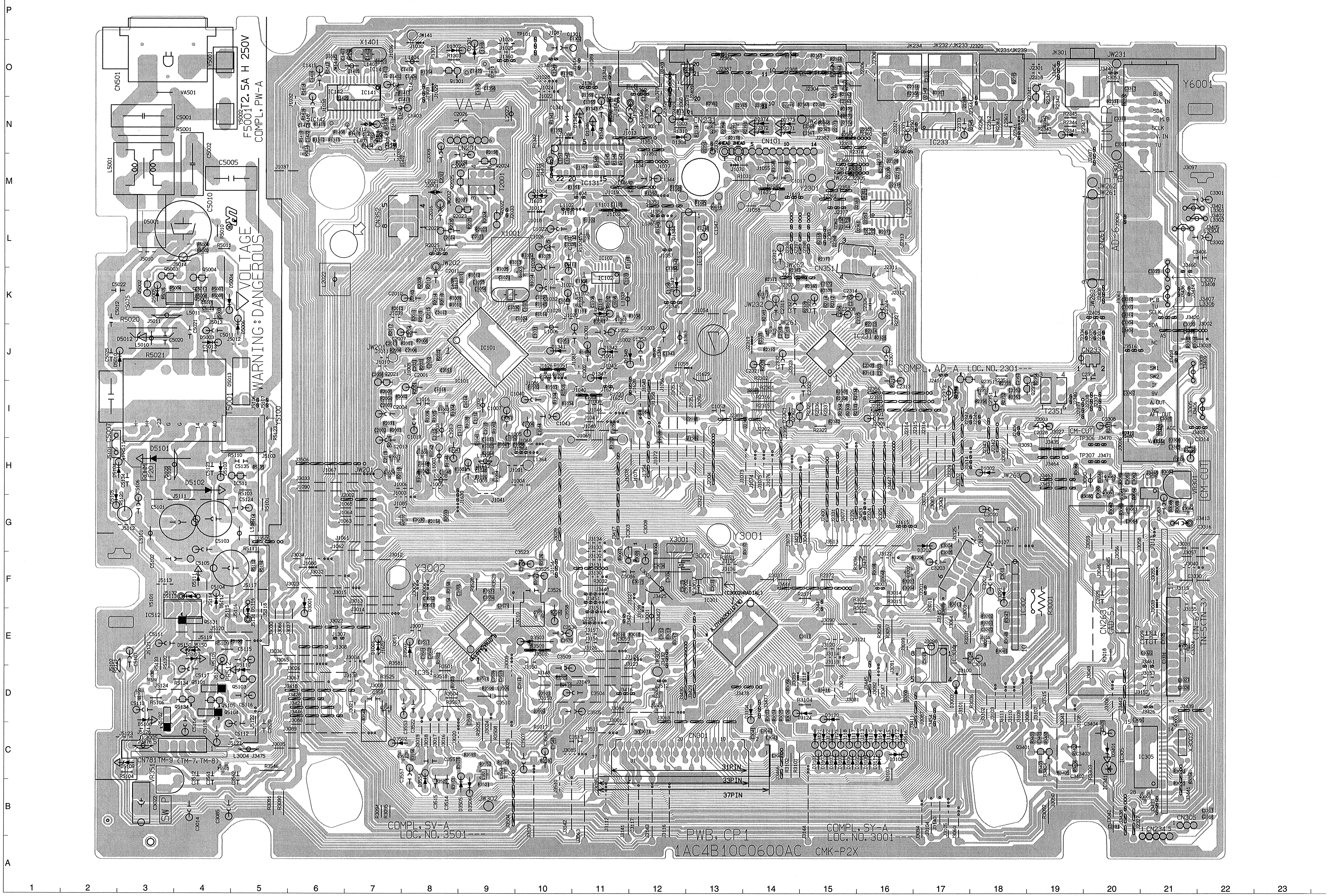


IC301 SYSTEM CONTROL,TIMER & TUNING CONTROL MPU PIN FUNCTIONS TABLE

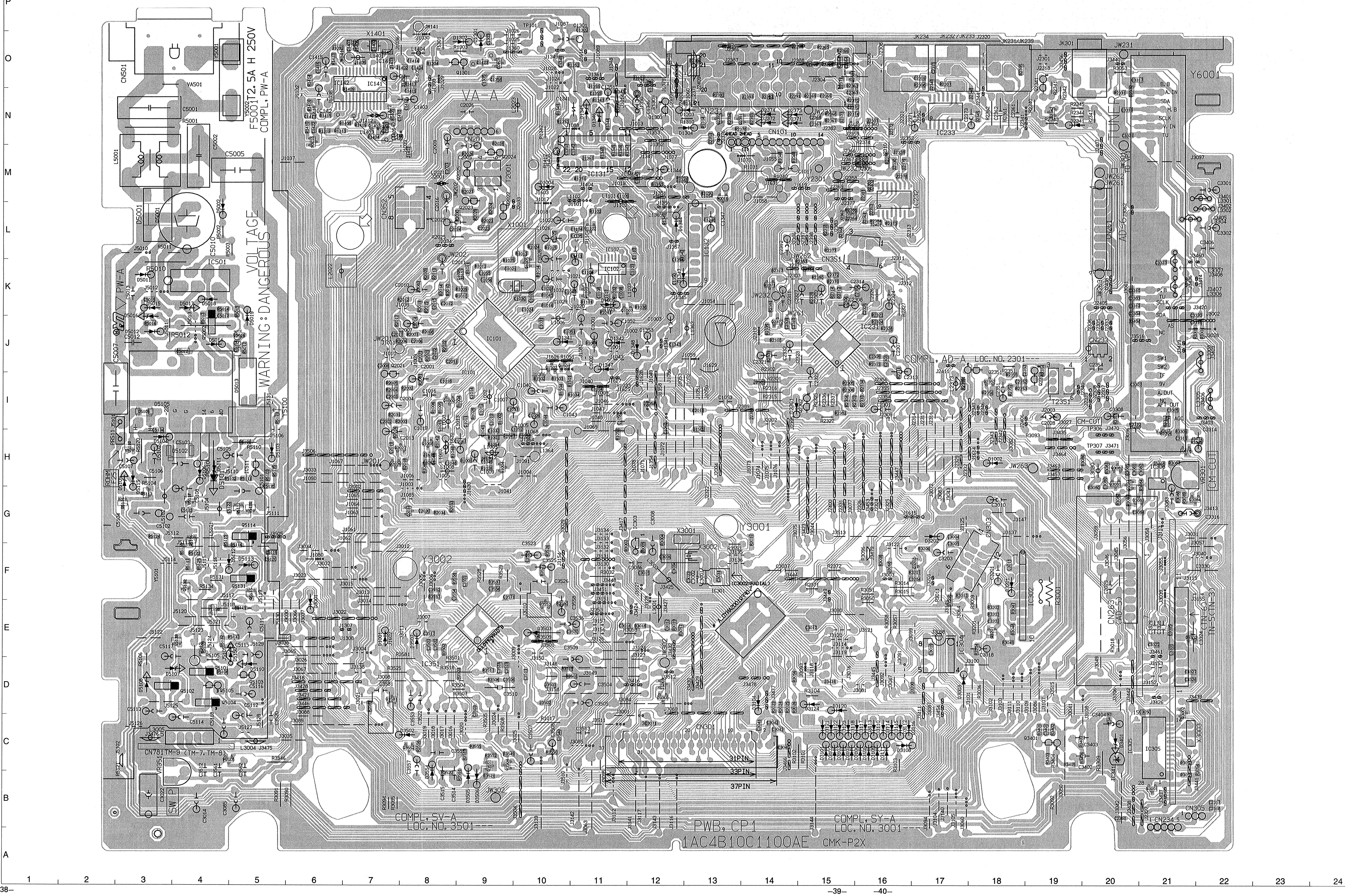
No.	Name	I/O	H/L	I/O Signal Function
1	SYNC DET	I	-	Sync. signal input for existing channel discrimination and TV system discrimination.
2	NC	-	-	-
3	DRUM UP	O	H	Head drum motor rotation speed up signal.
4	SS + DRUM SHIFT	O	-	Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage)
5	C - Vs CUT	O	H	Cut off for capstan motor control voltage in SLOW / STILL modes.
6	CAP P.	O	H	Gain down control for Head Motor at SLOW mode.
7	VISS H	I	H	CTL pulse duty detection signal input. Used for VISS detection.
8	MC - BR	O	H	Brake signal for capstan motor.
9	POS SW0	I	L	Data indicating operation position of mechanism. (0V : SEARCH,STILL,SLOW,STOP,PLAY, and REC modes) (5V : EJECT,REW, and INITIAL modes)
10	FL- START + SAFETY SW	I	L	Switch input indicating start of cassette loading or discharge by cassette mechanism and detecting accidental erasure prevention tab of cassette tape.
11	-	-	-	-
12	RESET	I	L	Initial reset terminal for this IC.
13	CLK 1	-	-	Clock OSC during power failures. Frequency is 32kHz.
14	CLK 2	-	-	
15	VSS	-	-	Ground terminal
16	CF 1	-	-	IC clock OSC terminal. Frequency is 8.5MHz.
17	CF 2	-	-	
18	VDD	-	-	IC power supply terminal. (5Vdc)
19	POS SW1+2	I	-	Data indicating operation position of mechanism. (2V: EJECT,REW ,and INITIAL modes) (3.4V: STOP, PLAY,REC, and F-SEARCH modes) (2.5V: STILL and SLOW modes) (5V: R-SEARCH mode)
20	T. REEL S.	I	-	Pulse input for detection of take-up reel table rotation.
21	T. TOP S.	I	L	Sensor signal input for tape beginning detection.
22	NC	-	-	-
23	T. END S.	I	L	Sensor signal input for tape end detection.
24	ENV.	I	-	Video head envelope detection signal input for ATR function.
25	HiFi ENV.	I	-	Hi-Fi audio head envelope detection signal input for ATR function. (Hi-Fi model only)
26	S. REEL S.	I	-	Pulse input for detection of supply reel table rotation.
27	YCA MUTE	O	H	Signal to disable audio signal output.
28	POWER DOWN	I	L	Power failure detection terminal.
29	TAPE SPEED	I	-	Input of result of tape speed discrimination by digital servo IC.
30	AFT - C	I	-	Tuner AFT S-curve signal input for tuner AFT control.
31	C - FG P.	I	-	FG signal input of capstan motor.
32	MESECAM DET	I	-	Signal for indicating MESECAM mode.
33	CTL P.	I	-	CTL head recording / playback pulse signal input.
34	NC	-	-	-
35	RF SW P.	I	-	RF switching pulse input, created by head drum PG.
36	REMOCON	I	-	Remote control signal input.
37	STOP LED	O	H	Signal for indicating STOP mode.
38	G9	O	-	Display grid outputs (FLD).
39	G8	O	-	
40	G7	O	-	
41	G6	O	-	
42	G5	O	-	
43	G4	O	-	
44	G3	O	-	
45	G2	O	-	
46	G1	O	-	
47	VDD	-	-	IC power supply input.(5Vdc)
48	V LOAD	-	-	-23V input for FLD drive.
49	SEG l	O	-	Display segment outputs (FLD). (Includes key-scan output)
50	SEG k	O	-	
51	SEG j	O	-	
52	SEG i	O	-	
53	SEG h	O	-	Display segment outputs (FLD). (Includes key-scan output)
54	SEG g	O	-	
55	SEG f	O	-	
56	SEG e	O	-	
57	SEG d	O	-	
58	SEG c	O	-	
59	SEG b	O	-	
60	SEG a	O	-	
61	REW LED	O	H	Signal for indicating REW mode.
62	FF LED	O	H	Signal for indicating FF mode.
63	PLAY LED	O	H	Signal for indicating PLAY mode.
64	DMSS/PAUSE LED	O	H	Signal for indicating DMSS or PAUSE mode.
65	KEY IN 0	I	-	Operation key data inputs.
66	KEY IN 1	I	-	
67	KEY IN 2	I	-	
68	KEY IN 3	I	-	
69	SAT CS	O	H	Chip enable signal to satellite control IC.
70	SUB BUSY	I	H	NOT USED
71	SUB CS	O	H	NOT USED
72	I2C S.DATA	I/O	-	Data exchange with I2C ROM, TUNER and video-audio IC.
73	SV S. DATA	O	-	Output 8-bit X 4 serial data giving operation mode and tracking data, etc., to digital servo IC.
74	OSD CS POWER OFF MUTE	O H	H O	Chip enable (access) signal output to OSD IC. "H" output when power is off, for disable output signal.
75	SV S. CLK	O	-	The clock pulse for digital servo IC.(TUNER,VA-A)
76	COMMON DATA	O	-	Terminal for communication of respective data with OSD IC,DMSS IC, SAT CTL IC and CH+ IC.
77	COM S DA I	-	-	NOT USED
78	COMMON CLK	O	-	The clock pulse for TUNER, video-audio IC,OSD IC, satellite control IC and E2P ROM.
79	BUZZER	O	-	NOT USED
80	TU PWM	O	-	Tuning voltage output (PWM signal). (V-syn model)
81	FSS IN	I	-	CH+ mode control signal input (CH+ model).
82	CH PLUS CLK	O	-	The clock pulse for CH+ in/out-select IC.(CH+ model)
83	DMSS CLK	O	-	Clock signal for audio DMSS unit.
84	MTS I2C DA	I/O	-	Data signal for MTS decoder.
85	MTS I2C CLK	O	-	Clock signal for MTS decoder.
86	SHORT TEST	I	I	REC mode indication signal input. (NOT USED)
87	A MUTE	O	L	"L" output for disable audio output signal.
88	V-STREO H	O	H	"H" output when simulated stoeo (V-streo) is ON.
89	VSS	-	-	IC ground terminal.
90	VDD	-	-	IC power supply input.(5Vdc)
91	PB L	O	L	Signal for indicating playback mode.
92	QSOUND H	O	H	"H" output when Q-sound(simulated sourround) is ON.
93	R1/R2	O	-	Signal for selecting AV-input(video/audio)source.(R1:L)
94	POWER LED	-	-	NOT USED
95	POWER UP	O	H	"HIGH" output except when power is off. Indicating that power is ON.
96	PAL H	O	H	Signal to indicate "PAL" mode.
97	AV CTL	O	-	Audio input source selecting for audio IC.
98	TUNER A MUTE	O	L	"L" output for disable tuner audio output signal.
99	ML- D	O	-	Loading motor rotation direction (FWD / REV) indication signal.
100	ML- S	O	-	Loading motor rotation speed (low / medium / high) indication signal.

AP_IC301_B

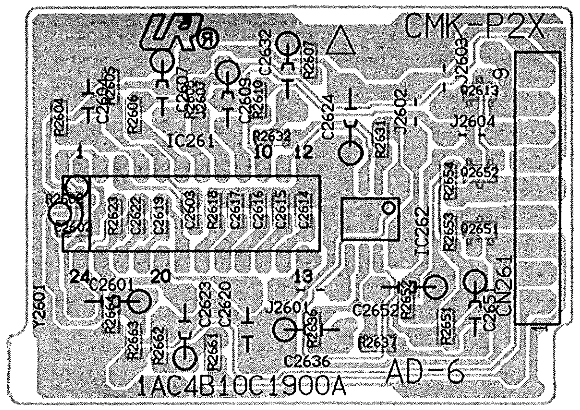
CP-1 P.W.B. (VHR-778E ONLY)


P
O
N
M
L
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
F5001 T2.5A H 250V
COMPL,PW-A
WARNING:DANGEROUS VOLTAGE
VA-A
TUNER
COMPL,AD-A LOC.NO.2301
COMPL,SV-A LOC.NO.3501
COMPL,SV-A LOC.NO.3001
PWB,CP1
1AC4B10C0600AC CMK-P2X
IC101
IC102
IC131
IC132
IC141
IC142
IC231
IC232
IC233
IC301
IC302
IC303
IC304
IC305
IC351
IC511
IC512
CN101
CN201
CN231
CN233
CN234
CN261
CN262
CN263
CN301
CN305
CN351
CN352
CN501
CN781
X1001
X1401
X3001
X3002
Y3001
Y3002
Y6001
T1001
T2351
T5001
JK231/JK239
JK232/JK233
JK234
JK301
VR301
VR351
SW P
CM-CUT
31PIN
33PIN
37PIN

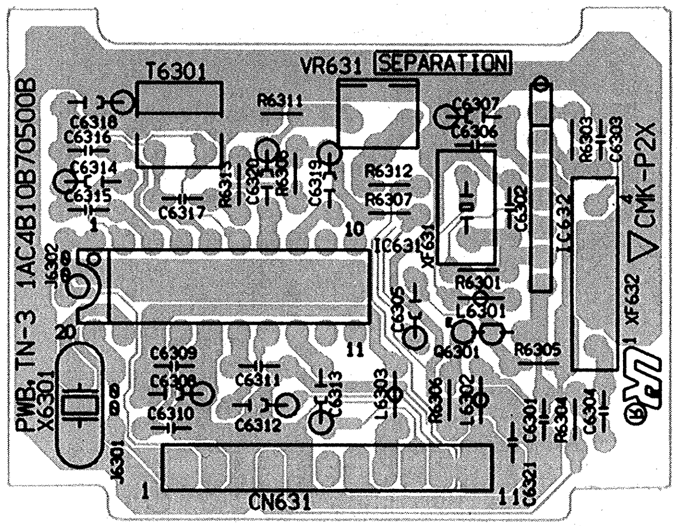
CP-1 P.W.B. (VHR-778G & VHR-788G)


P
O
N
M
L
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
F5001T2.5A H 250V
COMPL, PW-A
WARNING:DANGEROUS VOLTAGE
VA-A
TUNER
COMPL, AD-A LOC. NO. 2301
COMPL, SV-A LOC. NO. 3501
COMPL, SY-A LOC. NO. 3001
PWB, CP1
1AC4B10C1100AE
CMK-P2X
CN781TM-9 (TM-7, TM-8)
CM-CUT
31PIN
33PIN
37PIN

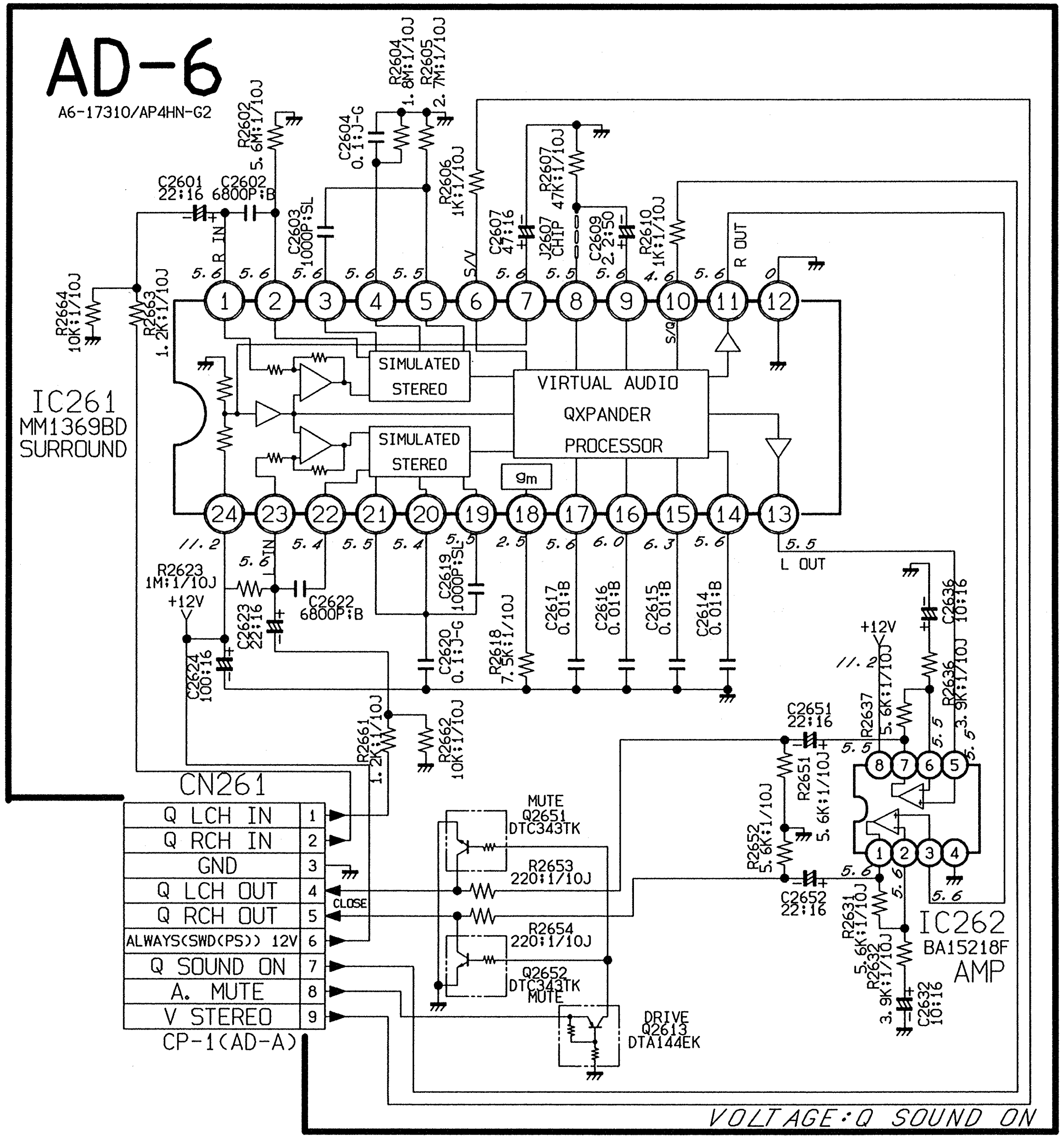
AD-6 P.W.B. (VHR-788G ONLY)


CMK-P2X
IC261
IC262
CN261
AD-6
1AC4B10C1900A

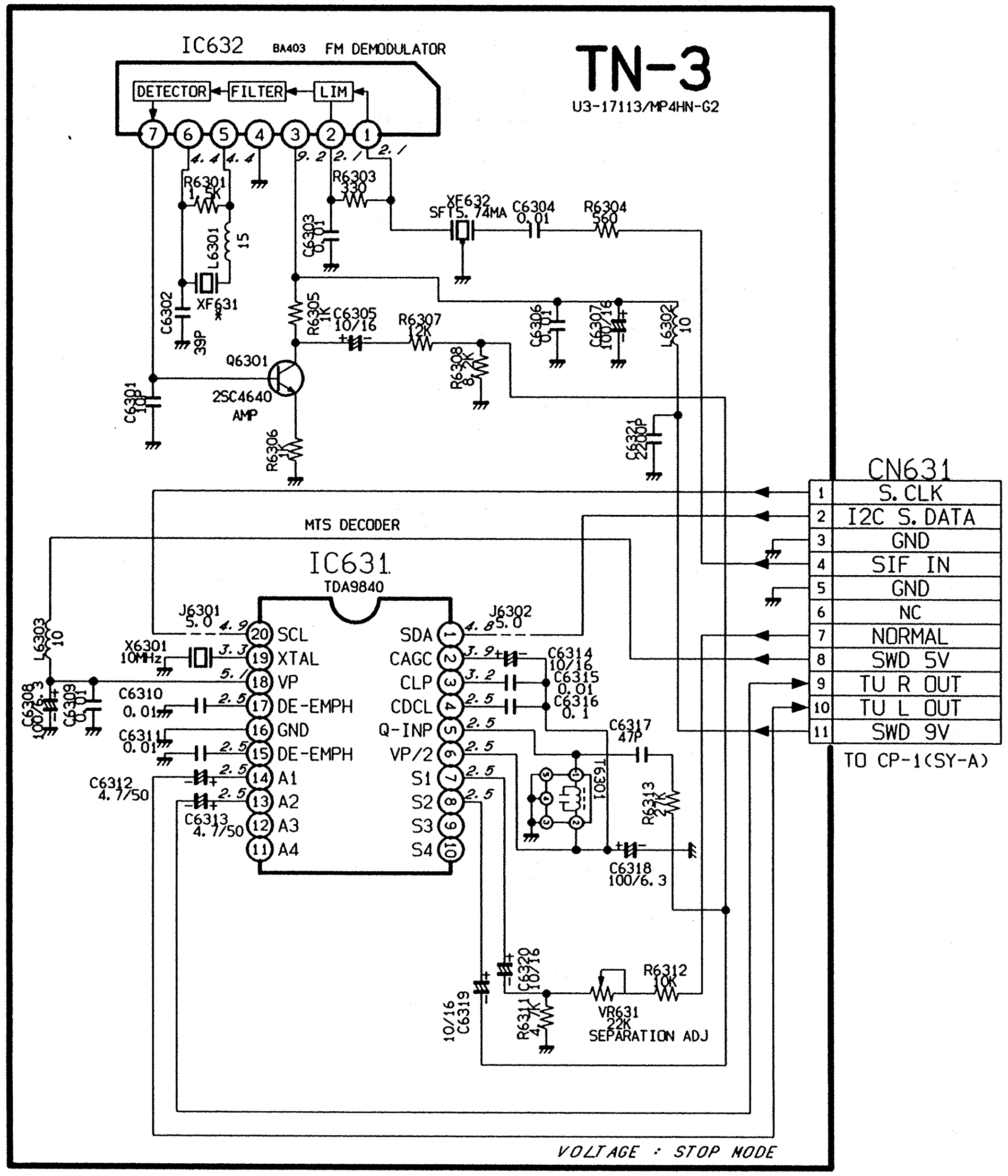
TN-3 P.W.B. (VHR-778G & VHR-788G)


T6301
VR631 SEPARATION
IC632
IC631
CN631
CMK-P2X
PWB. TN-3 1AC4B10B70500B
X6301
XF632

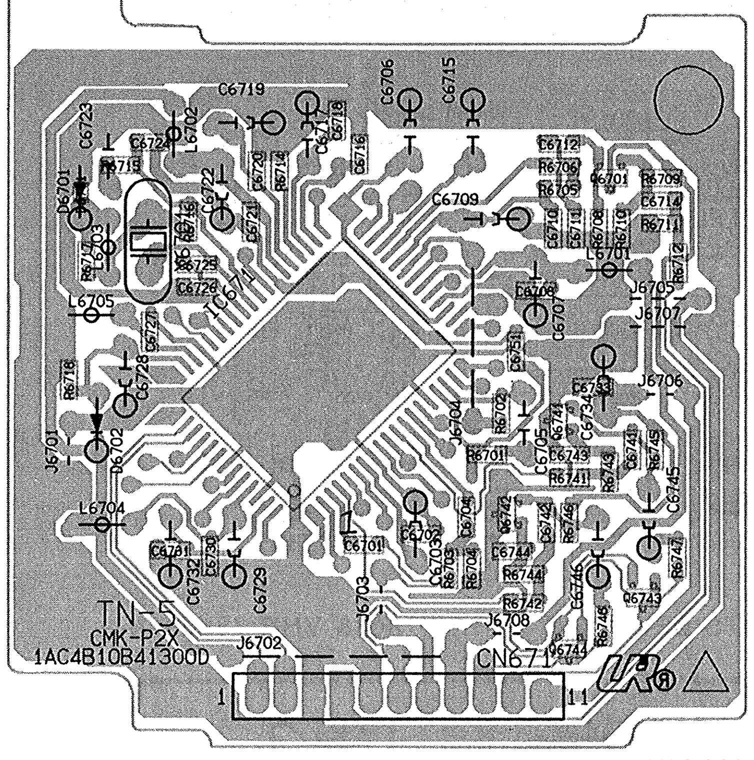
AD-6 BOARD Q SOUND (VHR-788G ONLY)


AD-6
A6-17310/AP4HN-G2
IC261
MM1369BD
SURROUND
SIMULATED STEREO
VIRTUAL AUDIO QXPANDER PROCESSOR
SIMULATED STEREO
R IN
L OUT
R OUT
S/V
9m
CN261
Q LCH IN
Q RCH IN
GND
Q LCH OUT
Q RCH OUT
ALWAYS(SWD(PS)) 12V
Q SOUND ON
A. MUTE
V STEREO
CP-1(AD-A)
CLOSE
MUTE Q2651 DTC343TK
R2653 220;1/10J
R2654 220;1/10J
Q2652 DTC343TK MUTE
DRIVE Q2613 DTA144EK
IC262
BA15218F
AMP
+12V
VOLTAGE:Q SOUND ON

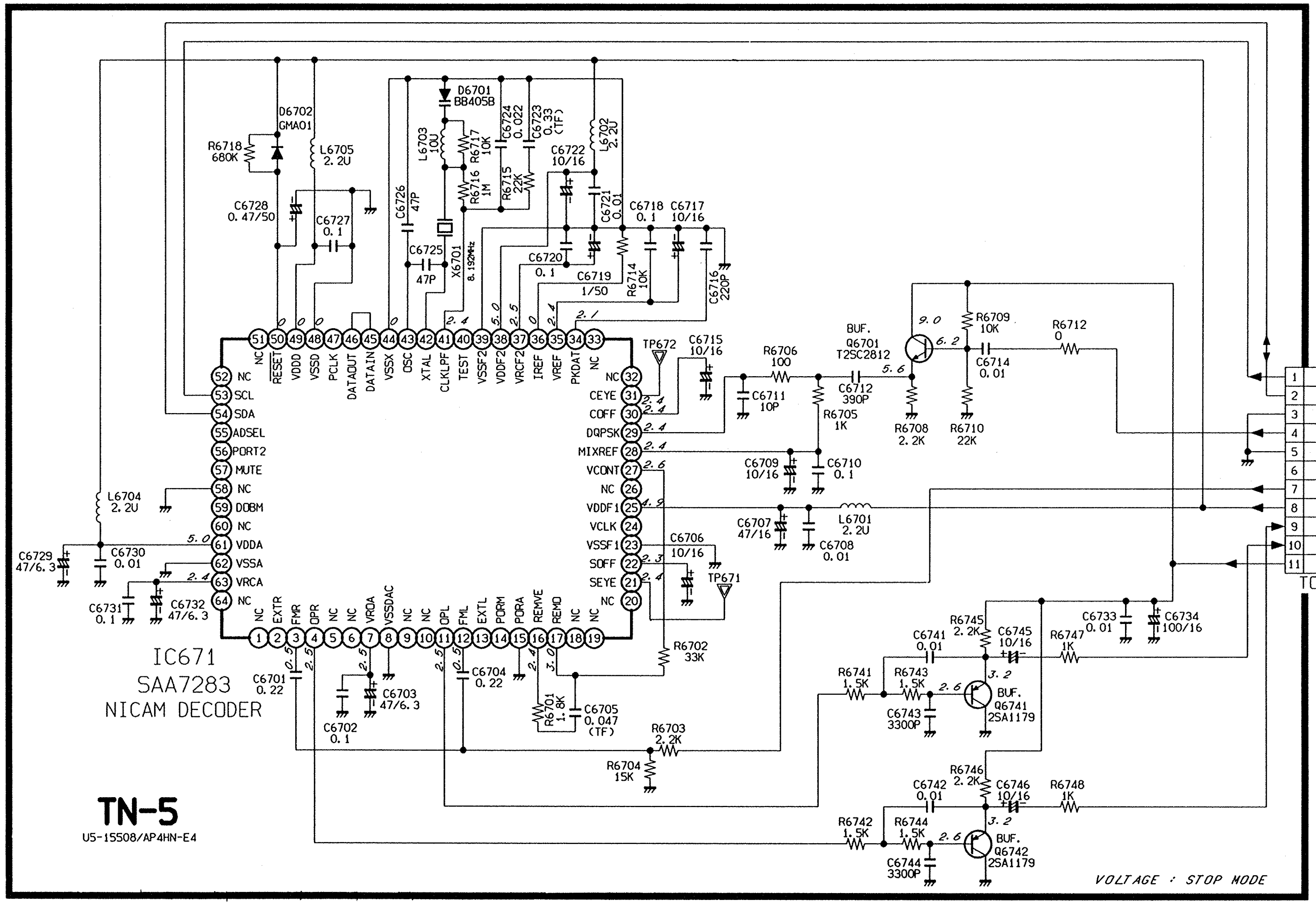
TN-3 BOARD MTS DECODER (VHR-778G & VHR-788G)


TN-3
U3-17113/MP4HN-G2
IC632 BA403 FM DEMODULATOR
DETECTOR
FILTER
LIM
Q6301 2SC4640 AMP
XF632 SFT5.74MA
MTS DECODER
IC631
TDA9840
SCL
XTAL
VP
DE-EMPH
GND
DE-EMPH
A1
A2
A3
A4
SDA
CAGC
CLP
CDCL
Q-INP
VP/2
S1
S2
S3
S4
X6301 10MHz
T6301
VR631 22K SEPARATION ADJ
CN631
S.CLK
I2C S.DATA
GND
SIF IN
GND
NC
NORMAL
SWD 5V
TU R OUT
TU L OUT
SWD 9V
TO CP-1(SY-A)
VOLTAGE : STOP MODE

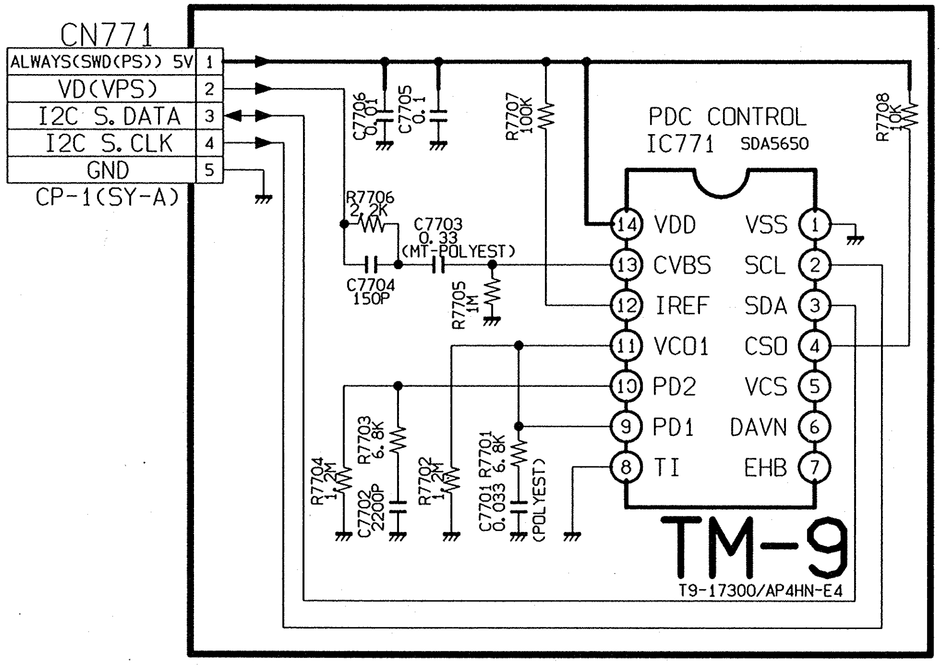
TN-5 P.W.B. (VHR-778E ONLY)


TN-5
CMK-P2X
1AC4B10B41300D
IC671
CN671
J6702
1
11

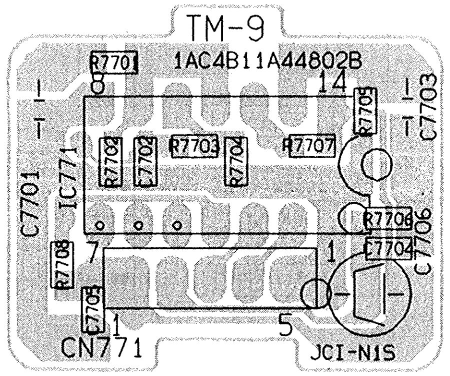
TM-5 BOARD NICAM DECODER (VHR-778E ONLY)


IC671
SAA7283
NICAM DECODER
D6701 BB405B
D6702 GMA01
X6701 8.192MHz
L6705 2.2U
L6702 2.2U
L6703 10U
L6704 2.2U
L6701 2.2U
BUF. Q6701 T2SC2812
BUF. Q6741 2SA1179
BUF. Q6742 2SA1179
TP672
TP671
CN671
1 S.CLK
2 I2C S.DATA
3 D GND
4 SIF IN
5 A GND
6 N C
7 NORMAL
8 SWD 5V
9 TU R
10 TU L
11 SWD 9V
TO CP-1 (SY-A)
TN-5
U5-15508/AP4HN-E4
VOLTAGE : STOP MODE

TM-9 BOARD PDC/VPS


CN771
1 ALWAYS(SWD(PS)) 5V
2 VD(VPS)
3 I2C S.DATA
4 I2C S.CLK
5 GND
CP-1(SY-A)
PDC CONTROL
IC771 SDA5650
14 VDD
13 CVBS
12 IREF
11 VCO1
10 PD2
9 PD1
8 TI
1 VSS
2 SCL
3 SDA
4 CSO
5 VCS
6 DAVN
7 EHB
TM-9
T9-17300/AP4HN-E4

TM-9 P.W.B.


TM-9
1AC4B11A44802B
IC771
CN771
JCI-N1S
14
7
1
5